CRITICALLY MEASURING EQUITY IN HIGH SCHOOLS AND ITS IMPACT ON AFRICAN AMERICAN STUDENTS

BY

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ABSTRACT

The challenge to serve the educational needs of marginalized and underserved communities in a system that historically oppresses them through the protection and maintenance of institutional racism is a pervasive conundrum. Reforms that are seemingly concerned with school inequalities are ultimately perfunctory as the goal to provide a quality education to all students is undermined by a largely uncritical discourse that fails to adequately identify, acknowledge, and address the ways that education systematically fails African Americans and other marginalized students. Rather than focus on inequities, this research critically frames and defines equity to explore the extent that schools, not students, are of quality. This research utilized a Critical Race Theory framework and Critical Quantitative methodology to understand the relationship between equity and student outcomes in the High School Longitudinal Study (HSLS). Three questions guide this research: How can equity be critically operationalized in the HSLS dataset? What is the relationship between equity in schools and student outcomes? Does access to equitable education experiences predict racial disparities? Findings suggest that the publicly available HSLS data set does not include school characteristics that describe equity in ways that account for student outcomes. Student characteristics such as race, gender, SES, are more predictive of student outcomes than school characteristics. In the discussion section the limitations of data, definition of equity, and implications of data are critically addressed.

To My Ancestors, Family, Friends and Community,
I stand on your shoulders.
May this work build on your incredible legacies.

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CHAPTER 1: INTRODUCTION

The challenge to serve the educational needs of marginalized and underserved communities in a system that historically oppresses them through the protection and maintenance of institutional racism is a pervasive conundrum. As public schools' demographics grow increasingly representative of students of color, so do the urgent calls for supposedly social justice oriented, culturally responsive, equitable education reforms. These reforms, seemingly concerned with school inequalities are ultimately perfunctory as the goal to provide a quality education to all students is undermined by a largely uncritical discourse that fails to adequately identify, acknowledge, and address the ways that education systematically fails African Americans and other marginalized students (Jay, 2003). Furthermore, such an uncritical engagement minimizes and co-opts language like equity and social justice, relegating them to cursory buzzwords. Will reducing or eliminating the achievement gap actually address educational inequities? Will a common core curriculum be the solution to ensuring that all children have a basic knowledge that will help them to be successful in life? How can we achieve, practice, and evaluate equity in education?

Since the conception of American schooling during a time of state sponsored segregation and racism, public school systems oppressed African American students. The education debate between W.E.B DuBois and Booker T. Washington exemplify the diverse perspectives on how African Americans could be successful in such hostile environments. As segregation was proven to have negative impacts on Black youth, African Americans were offered a desegregated education that would maintain their subordinate status in society. Education of servitude describes the training and

conditioning of Black youth as cheaper laborers that provide a means for increased capital. This evolution of oppression illustrates the differences between symbolic change and meaningful change. Similarly, other institutions such as immigration and incarceration also evolved to maintain a steady source of cheap or free forced laborers. The questioning of how schools serve African Americans inevitably leads to the pontification on the purpose of education, and how this purpose might vary between different groups of students. Two widely accepted sociological theories on education, functionalist and conflict theory, illustrate some of the main perspectives on education.

Functionalist theory argues that education provides people with the necessary skills to exist and maintain society passing on values, traditions, and culture deemed necessary (Hurn, 1978; Sever, 2012). This perspective views students as tabula rasa to impose knowledge upon and that students' abilities and efforts are what determines deservingness. Conflict theory of education argues that education serves as a mechanism to maintain social inequality (Hurn, 1978). Undergirded by a critique of capitalism, Hopkins (1994) one scholar uses conflict theory to describe managerial assembly line styled classrooms as "the purposeful manipulation of students toward predetermined ends and ignores the experience of the students themselves, viewing it as a contamination of the process [of education]" (p. 12). Subscribers of conflict theory emphasize that inequalities are produced, maintained, and normalized through education.

A third perspective on the purpose of education comes from the work of scholars like W.E.B DuBois and Paulo Freire: education for liberation and transformation. Critical frameworks, such as Critical Race Theory, Culturally Responsive Pedagogy, and Critical Pedagogy, go beyond acknowledging inequalities in education by working to actively

dismantle systems of oppression. Critical paradigms share several common themes, among them are the importance of history and context, identity, hegemony, consequences, and action (Ladson-Billlings, 1995; Apple, 1982; Jay, 2003; Sever, 2013). W.E.B. DuBois (1997) and James Anderson's (1988) seminal books, *Black Reconstruction in 1860-1880* and *The Education of Blacks in the South, 1860-1935* provide important context about African Americans at large, and the latter specifically regarding education. These contexts illustrate the justification of oppression in history, while accounting for the evolution of race, culture, and racism over time.

Context and identities define how people experience and interpret the world. How people interact with the world is largely impacted by their salient identities such as their physical appearance, gender, sexuality, age, cultures, beliefs, languages, and values. In critical paradigms, hegemony, a reference to domination and oppression, permeates the socialization of people in societies in ways that normalized the status quo creating seemingly "natural" states of being (Apple, 2004; Giroux, 1983). The consequences of hegemony, whether intentional or unintentional, socially constructed or not, can have a real and vast impact on individuals' lived experiences; these consequences can materialized as undeserved privilege and undeserved disadvantage. Additionally, criticalists emphasize that it is not enough to name or document damage, but that it is imperative to take meaningful action against oppressive forces (Friere, 2000).

Institutional racism and oppression in education significantly impacts African American students in complex ways. Institutional, systemic, or structural racism and oppression refer to the collaborative dynamics of politics, identity, and power systems. Lawerence and Keleher (2004) describe structural racism as,

> Structural Racism in the U.S. is the normalization and legitimization of an array of dynamics – historical, cultural, institutional and interpersonal – that routinely advantage whites while producing cumulative and chronic adverse outcomes for people of color. It is a system of hierarchy and inequity, primarily characterized by white supremacy – the preferential treatment, privilege and power for white people at the expense of Black, Latino, Asian, Pacific Islander, Native American, Arab, and other racially oppressed people. (p.1)

African Americans receive harsher disciplinary action, are more likely to be referred to special education, and are less likely to be enrolled into honors and Advanced Placement classes (Gregory, Skiba & Noguera, 2010). The bias that leads to these disciplinary actions directly reflect the school to prison pipeline and supported by schools' disciplinary policies (McNeal, 2016). The well-documented overrepresentation of African Americans in special education is another level of institutional racism that impacts students' access to educational opportunities. Overrepresentation is the result of teacher bias, biased assessments, and bias educational policies (Artiles & Trent, 1994 & Blanchett, 2006). Despite overrepresentation, African American students do not benefit from special education advocacy and progressive policies to the same extent as their counterparts (Fierros & Conroy, 2002).

Curriculum and pedagogical choices also reflect institutional racism. Curriculum can be described in two ways, the overt curriculum, and the hidden curriculum. The hidden curriculum refers to the teaching of norms, values, and beliefs that are taught tacitly (Giroux & Penna, 1983; Jay, 2003). Jay (2003) argues that the hidden curriculum

"can serve as a hegemonic device for the purposes of securing, for the ruling class (and other dominant groups in society), a continued position of power and leadership" (p. 6). Lisa Delpit (2006) outlines the culture of power as an explanation to how culture impacts classrooms, specifically how white students benefit from such environments and African American students do not. Delpit describes the culture of power as the following aspects:

(a) Issues of power are enacted in classrooms

(b) There are codes or rules for participating in power; that is, there is a "culture of power"

(c) The rules of the culture power are a reflection of the culture of those who have power

(d) If you are not already a participant in the culture of power, being told explicitly the rules of that culture makes acquiring power easier

(e) Those with power are frequently least aware of--or least willing to acknowledge--its existence. Those with less power are often most aware of its existence. (p. 24)

These works illustrate that central to institutional racism, is a theme of domination and implicit identities of those regarded as superior and those regarded as inferior. Proponents of multicultural education who support a pluralist education argue that the hidden curriculum reinforces white dominance in society (Jay, 2003). The explicitly Euro-centric curriculum of schools that often focuses on the contributions and achievements of White people, largely neglects the contributions of people of color (Ladson-Billings, 1995; Ogbu, 1987; Au & Mason, 1981; Skiba et al, 2008; & Delpit, 2006). These types of curriculum minimize the ways people of color experience colonization and imperialism, and can also misrepresent them in dehumanizing ways.

It should be noted that the examples presented here are in no way comprehensive of institutional racism, but they do illustrate its complexity. The final instance discussed here will address finances and resources. One of the most widely recognized financial inequities is the use of property taxes to fund schools. Aleman (2007) found that the use of property values disadvantage Mexican American students and schools serving Mexican American students through operational and facilities funding. There are countless litigations across the United States seeking to address financial inequities in schools. Seventeen cases have found school funding in states unconstitutional (Lundberg, 2000).

The impact of institutional racism and inequity in education is broad, complex, severely damaging, generational, and omnipresent. Despite this complexity, responses to inequities in education are one dimensional and uncritical. Academically, African American students are often associated as "at-risk" students who consistently underperform when compared to their White counterparts. Recent education reforms rely on standardized tests to understand the achievement of American students. While recent reforms focus on addressing the achievement gap, the achievement gap is truly a reflection of the larger gaps in public education. According to Darling-Hammond "gaps in school spending, access to qualified teachers, and access to higher education were smaller in the mid-to late 1970s than they had been before and, in many states, than they have been since" (2007).

The socialization of students into societal hierarchies has deep psychological implications. Just prior to the War on Poverty, Brown v. Board of Education in Topeka overturned the Plessey v. Ferguson ruling, stating, "separate educational facilities are inherently unequal" in 1954 (Brown v. Board, 1954). Sociologist, psychologist, and other

leading experts declared that separate schooling fostered inferiority complexes, lower quality materials and resources, and had other negative effects on Black children. The Supreme Court found that "to separate [children] from others of similar age and qualifications solely because of their race generates a feeling of inferiority as to their status in the community that may affect their hearts and minders in a way unlikely to ever be undone" (1954). The Clarks' infamous doll test illuminated the internalized prejudice as a result of segregation.

While today, many educators would likely denounce segregation, it persists and evident across the nation. In the early 1990s, schools were released from the Brown v. Board court ordered desegregation plans, and segregation has been on the rise since; policy no longer stipulates policies that schools directly desegregate (Reardon, Grewal, Kalogirdes, & Greenberg, 2012; Fiel, 2013). In New York City, most of the white students in one district were assigned to 6 of 18 schools the district operated, while African American and Latino students were mostly assigned to the other 12 schools (Roda & Wells, 2012). School choice policies such as vouchers, charter schools, and open enrollment ultimately contribute to school segregation if families cannot afford to use school choice options, such as transportation to the preferred school. (Roda & Wells, 2012). Since the introduction of school choice policies in metropolitan areas in Denver, the percentage of white students enrolled in low performing schools fell from 40% to 10%, while the enrollment for African Americans increased from 20% to 80% (Aske, Corman, & Marston, 2011).

Beyond the physical segregation of students between schools, students are segregated within schools via tracking and other educational policies (Anaslone, 2006).

According to Anaslone (2006), tracking was implemented in schools around the same time courts mandated desegregation. In this regard, tracking was a new way to systematically segregate students. Students in the lower tracks experience a restricted learning environment when compared to students labeled as talented or gifted. The overrepresentation of African American students in special education is another example of within school segregation. Studies show that teachers can be both unintentionally and intentionally racially bias in their recommendations for special education (Gershenson, Holt, & Papageorge, 2016).

From teacher quality, pedagogy, curriculum, disciplinary practices, admissions, and more, school inequalities and the ways in which schools constrain African American students are complex. Largely, schools work in concert with other societal institutions to further exacerbate societal inequalities. Despite these challenges, African Americans have historically resisted institutional oppression within society and within education. During slavery, they taught one another to read and write, skills essential to their freedom (Williams, 2005). During the era of sharecropping, African Americans collectively contributed to funds for schools and community members built the schoolhouses. As education became institutionalized, African American communities fought for better and equal resources for their students (Anderson, 1988). Education was essential to many of the Black freedom struggles; freedom schools and Afrocentric schools exemplify African Americans' resistance and fight against institutional oppression (Perlstein, 2002). Education was and is seen as a path for African Americans to overcome oppressive systems. Education and schooling have the potential to liberating to African Americans and all other students from the binds systemic oppression.

It is within this context that this dissertation addresses how school quality influences the types of educational experiences of African Americans students using an equity-based framework. Schools are positioned as systems that play a significant role in explaining student outcomes. As such, African Americans and other students of color are positioned as capable students who are deserving of positive educational experiences despite their neighborhoods, income brackets, families, or cultures. W.E.B. DuBois stated that,

> "...The Negro needs neither segregated schools nor mixed schools. What he [and she] needs is education. What he [and she] must remember is that there is no magic, either in mixed schools or in segregated schools. A mixed school with poor and unsympathetic teachers, with hostile public opinion, and no teaching of truth concerning Black folk, is bad. A segregated school with ignorant placeholders, inadequate equipment, poor salaries, and wretched housing is equally bad…" (1935, p. 335)

DuBois' quote illustrates the importance of measuring school inputs that could be used to explain student outcomes. His emphasis on the reality of hostile environments for Black children and the literature that identifies racism and prejudice as greatly impacting the experiences of African American students, demonstrate the necessity of using a critical lens to investigate equity. Three questions guide this research: How can equity be critically operationalized in the HSLS dataset? What is the relationship between equity in schools and student outcomes? Does access to equitable education experiences predict racial disparities?

Focusing on equity in schools may help scholars, politicians, and families make better-informed decisions because while changes can be made to schools, changes cannot be made to students' race, SES, or culture. Focusing on the institution of schools, places the onus of responsibility directly on schools. This research is also significant as it critically interrogates assumptions about schools and education, like the meaning of educational equity, the purpose of schools, and the function of schools. This research utilized a Critical Race Theory framework and Critical Quantitative methodology to understand the relationship between equity and student outcomes in the High School Longitudinal Study (HSLS). Findings suggest that the publicly available HSLS data set does not include school characteristics that describe equity in ways that account for student outcomes. The implications of a dataset that does not adequately provide measures to describe equity have great consequences for African American students. The following chapter provides a literature review of critical race theory, equity, and school quality which collectively provide the theoretical framing of this research. Chapter three details the methodology and methods used to investigate the aforementioned research questions. Chapter four reports the results of conceptualizing and measurement of equity and statistical analyses. Chapter five provides a critical discussion of the results and suggestions for future research.

CHAPTER 2: LITERATURE REVIEW

Discourse regarding educational equity inevitably demands a definition that accounts for the essence of fairness, morality, and restoration contextualized within a critical framework. In the following literature review, equity is conceptualized as school quality to construct a landscape of what is considered to be a good or bad school that addresses the educational needs of African American students. Critical Race Theory (CRT) provides a necessary lens to understanding equity in ways that are meaningful and potentially transformative. CRT challenges scholarship to critically engage research, questioning everything, including epistemology, ontology, methodology, to axiology. While seemingly straightforward, there is little agreement about what makes a school of quality; yet it remains central to education discourse. Is a school high quality if it offers great opportunities to learn, but access to them are restricted from students of color? Is a school high quality if students are academically successful, and are equipped with the skills and knowledge to maintain society but not to transform society?

This literature review defines equity in education which provides a guideline for examining school quality literature. An overview of CRT is which frames the construction of equity in education. The next section compares non-equity based conceptualizations of school quality and equity-based conceptualizations of school quality. This section illustrates how these conceptualizations work to maintain or disrupt the status quo and compare how they address the different educational needs and purposes. These comparisons are used to outline the kinds of conclusions, reforms, and actions that can be taken based on both ways of understanding school quality. The final section in the

literature review summarizes the literature review and discusses how this research can address gaps in the literature.

2.1 CRITICAL RACE THEORY

Critical Race Theory (CRT) is a theoretical framework that investigates the "unequal and unjust distribution of power and resources along political, economic, racial, and gendered lines" (Taylor, 2009, p.1). CRT originated from Critical Legal Studies under the direction of Derrick Bell, who is considered the father of Critical Race Theory (Ladson-Billings & Tate, 1995). Critical Legal Studies was designed to explain how policies and law contribute to racial inequities in the United States (Chapman & Donner, 2015). Matsuda defines CRT as,

> the work of progressive legal scholars of color who are attempting to develop a jurisprudence that accounts for the role of racism in American law and that work toward the elimination of racism as part of a larger goal of eliminating all forms of subordination. (Matsuda, 1991, p.1331)

In the mid-1990s, Gloria Ladson-Billings and William Tate, Jr. applied CRT to the field of education in "Toward a Critical Race Theory of Education" (1995). This article argued that racism is deeply embedded in American society and that racist institutions thwart outcomes for African American students. Ladson-Billings and Tate establish racism as a cause of high poverty rates amongst African American families, segregated neighborhoods, and low-quality schools. Bell (1992) coined the term racial realism, which declares that race and racism impacts the interpretation of United States laws and policies

in ways that privilege White Americans. This concept explains the disproportionate of treatment of students of color who are supposedly governed by the same rules and standards as their White peers. Ladson-Billings and Tate's article critiques the ineffectiveness of civil rights laws that were enacted to protect African American families through desegregation. Understanding the connection between racism and the differential treatment of policies across racial groups is essential to understanding African Americans' experiences in education.

Bonilla-Silva (1997) states that "[t]he social structure of American society has been racialized, meaning that the United States is a society 'in which economic, political, social, and ideological levels are partially structured by the placement of actors in racial categories or races'" (Bonilla-Silva 1997, 469). Despite race being a social construct, people of color are treated unfairly, unequally, and with disregard by institutions (and people) which have very real consequences on their lives. This racist treatment extends to the educational political landscape of students, schools, districts, and educational systems. Bell, Castañeda, and Zúñiga define racism as,

> [T]he set of institutional, cultural and interpersonal patterns and practices that create advantages for people legally defined and socially constructed as "white," and the corollary disadvantages for people defined as belonging to racial groups that were not considered Whites by the dominant power structure in the United States. (2010, p.10)

In education, there are distinct advantages to membership in being socially constructed as "White." Those advantages or unearned privileges are the very foundation of hegemony.

Stuart Hall's, a renowned scholar in cultural studies, scholarship provides an important analysis of the intersections of identity, ideology, and power. In Hall's (1992) seminal chapter, "Cultural Studies and its Theoretical Legacies," Hall traces the development and use of hegemony through examination of moments of cultural studies. Hall describes Marxism's agenda as four-fold regarding power, class, exploitation, and critical knowledge,

> "the power, the global reach and history making capacities of capital; the question of class; the complex relationships between power, which is an easier term to establish in the discourses of culture than exploitation, and exploitation; the question of a general theory which could, in a critical way, connect together in a critical reflection different domains of life, politics and theory, theory and practice, economic, political, ideological questions, and so on; the notion of critical knowledge itself and the production of critical knowledge as a practice. These important, central questions are what one meant by working within shouting distance of Marxism, working on Marxism, working against Marxism, working with it, working to try to develop Marxism."

Hall criticizes Marxism as incomplete due to its "profound Eurocentrism" which he believes is the result of when and where Marx was born. According to Hall, Marxism does not account for his experience as an African American male in a "capitalist society, economy, and culture…imposed by conquest and colonization." Gramsci's scholarship on hegemony provides a framework for scholars to discuss power, class, exploitation, and critical knowledge while accounting for contexts within conquest and colonization. In the article, Hall positions feminism and critical race theory as frameworks to understanding

the personal as political, and social and racialized power within hegemonic states. CRT is a framework that can be used specifically to understand the experiences of African American students. The growing scholarship and evolution of Critical Legal Studies, which include Critical Race Theory, Critical Feminist Theory, Latinx Critical Theory (LatCrit), Asian Crit, and Queer Crit, investigates salient identities and their intersections within contexts of power and resistance.

CRT was developed as a framework, methodology, and method for scholars, educators, researchers, and society at large to connect the "history of race and racism in the U.S public education and current reform policies that purport to foster equity and excellence in education" (Chapman & Donner, 2015). Solorzano and Yosso describe the key focus of CRT in education as,

> CRT in education is defined as a framework or set of basic perspectives, methods, and pedagogy that seeks to identify, analyze, and transform those structural, cultural, and interpersonal aspects of education that maintain the marginal position and subordination of African American and Latino students. CRT asks such questions as: What role do schools, school processes, and school structures play in the maintenance of racial, ethnic, and gender subordination? (Solorzano & Yosso, 2000, p. 42)

More specifically, CRT is also used to examine education policy and the educational political landscape and their "unequal and unjust distribution of power and resources along political, economic, racial, and gendered lines" (Taylor, 2009, p. 1). These distributions are "part of our everyday reality but in more subtle, invisible, and insidious

ways in contrast to the past" (Savas, 2014, p. 508). CRT can illustrate and disrupt "normal" or "natural" status quos used to justify the unequal treatment of groups across identities. CRT has seven central tenets: (a) the permanence of racism, (b) intersectionality, (c) Whiteness as Property, (d) the critique of Liberalism, (e) interest convergence, (f) counter storytelling, and (g) a commitment to social justice.

The permanence of racism refers to the fixed position of racism in the structure of American society (Delgado, 1995; Ladson-Billings & Tate, 1995). This tenet centers racism in systems as opposed to individual racists. Intersectionality refers to the compounded effects of multiple marginal identities that individuals may have, such as being both African American and a woman (Crenshaw, 1989; Crenshaw, 1991). Intersectionality demonstrates how intersected identities can have very different experiences when compared to groups that only account for one marginalized identity. Whiteness as property is a term coined by Cheryl Harris (1993) who argues that whiteness acts as a form of property that provides exclusive rights and privileges similar to property rights in America. "Whiteness as property assumes the form of the exclusive right to determine rules; it asserts that, against a framework of racial dominance and unequal power, fairness can result from a property rule, or indeed any other rule, that imposes an entirely externally constituted definition of group identity" (Harris 1993).

Critique of liberalism is a tenant that directly confronts problematic ideologies like colorblindness and equality which inherently maintain institutionally racist systems. This tenet criticizes meritocracy, claims of even playing fields, and the intentional silencing (ignoring experiences associated with race) of people of color (DeCuir & Dixson, 2004).

Bell (2004) defines interest convergence as "the interest of blacks in achieving racial equality will be accommodated only when that interest converges with the interest of Whites in policy-making position" (p. 69). Furthermore, Bell argues that White people will not participate in racial equality if it threatens their status in society. Counter storytelling moves experiences of people of color from the margins by centering and legitimizing them in discourse (DeCuir & Dixson, 2004). Counter storytelling disrupts domination over narratives, histories, events, knowledge, and ways of knowing. The final tenet of CRT is a commitment to social justice that moves beyond symbolic gestures equality, to acting against power imbalances in society. The following sections in this literature review will not be organized by each tenet of CRT, but rather by the collective framework drawing on all tenets to critically inform this research.

2.2 EQUITY

> *Equity derives from a concept of social justice. It represents a belief that there are some things which people should have, that there are basic needs that should be fulfilled, that burdens and rewards should not be spread too divergently across the community, and that policy should be directed with impartiality, fairness and justice towards these ends.* (Falk et al. 1993, p. 2)

Equity, a term often used interchangeably with equality or social justice, is generally used to describe the treatment of a group of people and the relationship of that group to resources and opportunities. In education, equity is defined in multiple ways.

One definition of equity is that "educators provide all students with the individual support they need to reach and exceed a common standard" (Linton, 2011). Another description of equity, discussed as social justice describes it as "the notion that all individuals and groups should be treated with fairness, respect, dignity and should be entitled to the resources, opportunities, and protections that schools offer" (Noltemeyer et al., 2012). The first definition places accountability for equity on teachers, while the second definition is rather philosophical and does not hold any stakeholders accountable. Since the nature of inequities are systemic and complex, the conceptualization of equity in education should interrogate schools' capacities to offer equitable institutions. Some definitions of equity position equity as the equality of outcomes (Skrla, McKenzie, & Scheurich, 2009). DeCuir and Dixson (2004) make the distinction between equity and equality,

> In seeking equality rather than equity, the processes, structures, and ideologies that justify inequity are not addressed and dismantled. Remedies based on equality assume that citizens have the same opportunities and experiences. Race, and experiences based on race are not equal, thus, the experiences that people of color have with respect to race and racism create an unequal situation. Equity, however, recognizes that the playing field is unequal and attempts to address the inequality. (p. 29)

One reason for the differences in how scholars understand equity could be due to one's sense of fairness based on lived experiences, societal norms, and moral ideologies. Equity is inherently political, and perceptions of equity are also likely to vary based on one's position of power. For these reasons, equity may be defined generally around

philosophical ideals of disrupting institutional oppression, repairing the damages of institutional oppression, and centering the perspectives and voices of the marginalized groups in conceptualizing equity.

In the charter school discourse, equity is often used to advocate for charter schools that are purported to have more flexibility to adapt to students' needs and respond to educational inequities (Frankenberg, Siegel-Hawley, Wang & Orfield, 2012). One common belief about charter schools is that by creating a competitive market where schools must compete for students, students and families will have access to better opportunities that otherwise would not exists (Goldhaber, 1999). Using market theory, the assumption is that the mere presence of charter schools will drive all schools to provide better resources and opportunities to recruit and attract students, therefore reducing the enrollment at other local schools and have better educational outcomes (Lubienski, 2013 & Linick, 2014). Despite these claims, charter schools are highly criticized as be contributing to inequity. Market theory assumes that parents choose schools based on the quality of the school (Goldharber, 1999). However, school choice is a privilege bestowed to families under the circumstance to enjoy it. Parents may make their decision based on residential location, income, transportation, school admissions processes, school climate, safety, and more. Another study found that schools concerned with competition and their market position can exclude certain types of students to maintain an attractive school profile (Lacireno-Paquet, Holyoke, Moser, & Henig, 2002).

Generally, in the literature, equity in education refers to equal access, equal resources, and or equal outcomes (add citations). While all of these components are important, they allude to questions about equal access *to what*? Equal resources that *do*

what? And equal outcomes that *achieve what*? Is a school equitable because all children have equal access to a school that marginalizes the contributions of people of color? Is a school equitable because students are successful within their prescribed tracks? Without a critical framework, these definitions lack the nuance to be effective; instead they preserve the status quo under the intentions to make schools equitable. While most scholars, researchers, and educators are well intentioned, it is important to reconcile the consequences of school reform regardless of the intention.

This research defines educational equity as five essential components: (a) a commitment to principles that include respect, dignity, agency, fairness, restoration, pluralism, and self-determination as negotiated and defined by marginalized groups, (b) based on critical consciousness, (c) healing the damage of institutional racism, (d) collaboratively building a new institution, and (e) is locally defined by the people who are meaningfully engaged. In this regard, equity is a process, input, aspiration, and outcome. The belief in humanity and values associated with respecting humanity is foundational to educational equity. African American students and other marginalized groups, who historically have been commoditized, must have their humanity recognized. An example of commodification in education is "edupreneurs" who profit from underserved communities minimally or inappropriately serving them.

The second component of equity, critical consciousness, refers to a term coined by Paulo Friere. The term in portuguese, conscientização, refers to the one's ability to read the world (1970). Specifically, critical consciousness "is the ability to perceive social, political, and economic oppression and to take action against oppressive elements of society" (Friere, 1993, Locke & Bailey, 2014, p. xix). Without an understanding of

institutional oppression, it is possible that educational reforms and policy intended to lessen the achievement gap or eliminate disciplinary issues perpetuate oppression. Brown v. Board is one example how well-intentioned policy exacerbated school inequities. Prior to the onset of Brown v. Board, African Americans parents demanded better resources for their students when schools were still segregated. After Brown v. Board ruled that segregation was illegal, African American communities lost their schools, teachers, and administrators. Instead of receiving the same resources as White schools, African American students were bussed to White schools where they encountered a hostile educational environment.

The third component of equity is healing the damage of institutional racism or oppression. Although healing may not be controversial, the process by which healing may occur can be. Related narratives to healing such as reparations, restorative justice, and distributive justice often look to amend human rights violations. Healing is defined as "the process of bringing together aspects of one's self, body-mind-spirit, at deeper levels of inner knowing, leading toward integration and balance with each aspect having equal importance and value" (Dossey, Keegan, & Guzetta, 2005, p. 48). Healing is vital to equity because institutional racism and oppression are traumatic experiences. The fourth component of equity is collaboratively building a new institution. Culturally responsive teaching teaches that diversity and inclusion cannot be "added on" to curriculum; it must be integrated throughout critical (Ladson-Billings, 1994). Similarly, it cannot be expected that equity can be injected into inequitable institutions, rather the institutions themselves must transform.

The fifth and final component of equity is that community meaningfully contributes to the definition of equity in the educative process. This component centers the experiences and needs of the community in lieu of the democratic process, which is beneficial to groups who experience marginalization within democracies. A local definition of equity may help educators and policymakers avoid pitfalls of defining educational equity, which will have connotations for defining education goals, quality, practices and success. One pitfall, is defining success in a way that marginalized students are expected to assimilate. Andrews (2014), whose study is based on Yosso's cultural capital, highlights code switching as an additional skill African American youth need to be successful in classrooms. Code switching is a practice that involves changing one's language or dialect to one that is deemed appropriate by educational authorities, like teachers or principals. While code switching enables African American students to be more "successful" in schools, it also legitimizes language supremacy.

Using equity as a framework for understanding and re-conceptualizing school quality is necessary to meet the needs of African American students. Equity centers a critical framework that allows for the interrogation and disruption of covert and overt practices that produce and maintain educational inequities. Conceptualizations of school quality are imperative to education reform and policy. The following section discusses school quality within the context of non-equity conceptualizations and equity-based conceptualizations.

2.3 SCHOOL QUALITY

School quality was and continues to be an important topic in educational discourse. Official school quality measures and reports began with the Coleman Report and the Nation at Risk Report (Powell et al, 1985). These reports used indicators like socioeconomic status, race, school resources, and more to address educational inequities and disparities. As a result of these reports, major policies and school reforms were passed to improve school quality of public institutions. These reports illustrate the power of the conceptualization and measurement of school quality.

Definitions of school quality vary greatly (Leu, 2005). This section provides an overview of the various ways school quality is conceptualized. According to John Dewey, "the conception of education as social process and function has no definite meaning until we define the kind of society we have in mind" (1916, p.103). Each concept of school quality reveals the type of society students are being prepared for, and ultimately indicates whose and which needs are being addressed with each conceptualization. The literature reviewed in this section revealed four overall goals to understanding education and school quality: (a) economic development at the macro and micro levels, (b) personal development, (c) contributions to social progress and change, and (d) citizenship training. These goals are materialized through the following conceptualizations that builds on Harvey's (2006) categorization of school qualities conceptualizations: effectiveness, exceptionality and excellence, value for money, efficiency and consistency, equality and equity, fitness-for-purpose, and relevance.

Harvey (2006) describes school quality at length within the context of the United Kingdom. He distinguished school quality as both a concept and a mechanism. As a

concept, he provides five broad concepts of quality that served as a basis for the definitions of quality section. These concepts differ from the mechanisms of school quality which he refers to as quality assurance exemplified by evaluations, assessments, and other actions taken to measure or ensure school quality. Broadly, Harvey defines school quality as "a multi-dimensional, multi-level, and dynamic concept that relates to the contextual setting of an educational model, to the institutional mission and objectives, as well as to specific standards within a given system, institution, programme, or discipline." (2006, p. 2). The following section provides an overview of non-equity based school quality using a critical lens to explain their meaning within the context of African American students' needs.

2.3.1 Non-Equity Based School Quality

Effectiveness. Effectiveness is a popular way to conceptualize school quality; most of the articles included in the literature review for school quality conceptualize school quality as performance on standardized tests. Barrett et al. (2006) defined effectiveness as the extent to which school objectives are met. With the introduction of No Child Left Behind and other accountability based school reform, the goal or objectives of many schools have been to exceed proficiency standards set by districts and their previous year's performances. Few studies have demonstrated that there is a strong connection between these standardized tests and student achievement (Jennings et al, 2015). The advantages of using standardized test scores as indicators of school quality is that it allows for generalizations to be made across, schools, districts, and states.

Standardized test scores are believed to provide hard empirical data that should inform decision-making in education. However, some standardized tests in education have limited validity, suffer from cultural bias, narrow school curriculums, and only measure how well students performed on a particular test on a particular day (Medina & Riconscente, 2005).

Standardized tests are far too limited to serve as the primary basis for understanding school quality. While students' academic outcomes are important, so are the resources, teachers, environment, climate, space, curriculum, practices, and relationships that schools foster for students. Bernal, Mittag, and Qureshi (2016) investigated alternative indicators of quality such as class size, teacher characteristics, and expenditures. While they reported mixed reviews of these indicators, they argue that education is a basic human right that all people are entitled to and that school quality should include factors beyond standardized test scores like safety, efficient management, institutional reform, and the availability of adequate resources. Historically, standardized testing was introduced to help identify talented students with the aptitude for success. In this regard, standardized testing also serves as a sorting function for students. If students perform well, schools are rewarded and students are labeled as proficient to matriculate into the next grade or to college. If students do not perform well, they are labeled as poor performers and steered away from the opportunities afforded to their better performing classmates.

Furthermore, standardized tests buttress claims about the achievement gap between White and Asian students and their peers. However, the processes and functions

of schools vary so greatly, and often depend on students' racial and socioeconomic makeup, that comparing the test scores of students is misleading. Test scores do not reflect the educational debts, resource gaps, or opportunity gaps. Excluding the inputs from schools that lead to those outcomes is irresponsible and contributes to a false narrative that some students are simply smarter or work harder than other students. As a consequence, achievement gap narratives ultimately support implicit hegemonic systems.

Exceptionality and Excellence. Exceptionality refers to school quality as a vision of excellence that schools exemplify (Leu, 2005). Exceptionality is also associated with an elitist education as it is often believed that the best schools are those attended by rich students *because* rich students attend them (Harvey, 2006). Beliefs about private schools and the students who attend them in comparison to public schools are illustrative of this conceptualization of school quality. Identity, perception, and reputation are central to defining what is exceptional. Often, products, services, and experiences that are costlier are presumed to be better than the more economical options. Studies around race and culture illustrate how whiteness is associated with higher quality, while blackness is associated with the diminishment of quality. These notions are built on the philosophical ideals of white supremacy. White supremacy in systems privileges White culture, identity, and history to the disadvantage of people of color. Mills defined global white supremacy as "racial orders structured along the axis of 'white,' or European, and 'nonwhite,' or non-European" (as cited by Bonilla-Silva, 2001, p. 42). In this regard, exceptionality refers to school quality as the nature of exclusivity of the school. When systems fail to acknowledge the greatness of people of color and their contributions, stereotypes and deficit paradigms prevail.

Value for Money. Value for money is an economically based conceptualization of school quality that bases school quality on the educational experience of students within the context of financial investments in schools and expected outcomes (Leu, 2005). Deming et al. (2014), who investigated school choice in the Charlotte Mecklenburg school district, utilized an economic approach that exemplifies a value for money perspective of school quality. Their research was premised on the idea that,

> Improving the quality of high school education has become a first-order issue for economic growth, national competitiveness (US Department of Education 2006; Roderick, Nagaoka and Coca 2009), and equality of economic opportunity in light of the increasing wage returns to higher education (Acemoglu and Autor 2011). Yet there is little causal evidence on which policies can increase college attainment for students most in need (Murnane 2008). (Deming et al, 2014, p. 991)

Their research prioritized students' economic potential as a result of school choice as a measurement for school quality. Hanushek (2016) discussed the connection between school quality and long-term economic gains and improvement in human capital. Neither of these studies address systemic racism that undoubtedly impacts African American students' economic potential. Furthermore, the use of indicators like number of students in higher-level classes and the number of teachers from selective colleges reflects the exceptionality conceptualization of school quality.

Capitalism is most transparent in any perspective that roots school quality in terms of investments and returns. This perspective is problematic because historically, capitalism has benefitted tremendously from the oppression of people of color, such as the free and cheap labor of immigrants and African Americans. Some stratification studies argue that schools that serve students of provide a consistent pool of cheap labor. These studies illustrate Wilson's (1993) education of servitude mentioned in the introduction. Students are being prepared for work that does not contribute to their social mobility. In the United States, education has always been perceived as a key to success and the American Dream. Since the country's inception, education has also been used to maintain status in society. During the antebellum era, slaves were forbidden from reading (Williams, 2005). Shortly after emancipation Jim Crow laws were enacted to prevent Black Americans from enjoying their rights to citizenship. An example of this was the requirement that citizens read the Preamble of the Constitution for the right to vote. When Black Americans are unable to meet the ever-evolving requirements for access to opportunities, they are restricted from the credentials necessary in a meritocratic society for upward mobility.

Defining school quality using a perspective of value for money is a great disservice to students of color. This perspective aids in the restriction of African Americans. Preparation for obtaining a job will not challenge these power imbalances in society. The attainment of jobs will not inherently change disparities of economic outcomes between African Americans and their White counterparts. Furthermore, the value of educational investments, when there are great disparities in school funding is insufficient to draw conclusions about school quality.

Efficiency and Consistency. Efficiency is also a common way to conceptualize school quality that is closely related to exceptionality and excellence. Barrett et al. (2006) define efficiency as the extent to which inputs appropriately contribute to educational goals. Efficiency is an important concern as measures of school quality are anchored feasibility and practicality. According to Harvey (2006), consistency focuses on process standards that emphasize reliability. When school quality is reliable, one can expect consistent educational experience across various student groups (Leu, 2005). Students should consistently receive the same benefits of schooling as other students in their school. However, consistency is not enough to determine the quality of a school. In many instances, schools consistently fail to provide for the educational needs of students. As schools and districts grow increasingly segregated, consistency and efficiency are not nuanced enough to capture other elements that contribute school experiences. When schools are labeled as failing or serve perceived academically challenged students, there are low expectations of excellence (Harvey 2006, Ladson-Billings, 1994).

Equality & Equity. This perspective on school quality believes that schools should treat students equitable or provide equal educational outcomes. Proponents of this conceptualization of school quality are likely to be aligned with the humanist approach which positions education as a human right that all people are entitled to (Barrett et al., 2006). This perspective appears to be far more prevalent within the international literature on school quality than within the United States context. Large Not-for-profit non-government organizations (NGOs) and other organizations, like the United Nation's initiative Education for All, have issued several calls for improving school quality using a

framework of equality. Within the United States, Ooms (2014) wrote a report on Denver Public Schools' school improvement suggestions to provide higher quality schools for all students. He interpreted the closure of poor performing schools and the reassigning students to higher achieving schools as increasing school quality. This report used Denver's School Performance Framework to measure school quality which resembles many frameworks used by districts across the country and a marker of No Child Left Behind, relies on the proficiency scores from standardized tests to measure quality (Ooms, 2014; Thorton & Arbogast, 2014; Price, 2016).

Price (2016) who critiques the over reliance on standardized tests to measure school quality, found that closing schools with diverse populations allows poor test scores to be absorbed into the new school's average, and helps to lessen the possibility of school failure. Price also found that diverse students, coded language for non-White non-English speaking and differently abled students, are tracked into special education classes in order for schools to meet high quality standards' proficiency goals. In this regard, schools may maintain their status as a high-quality school and students of color may be enrolled in them, and students still may not have access to what makes the schools high quality if they are tracked into less challenging classes. Conceptualizations of equality and equity as school quality that lack a critical foundation are insufficient to meaningfully build schools to serve the needs of all students; especially when "all" means treating students as a monolithic group rather than intentionally addressing all the differentiated needs.

Fitness-for-Purpose. Fitness for purpose refers to how well schools prepare students to fulfill specific roles (Leu, 2005). According to Harvey (2006), fitness-for-

purpose references the functional aspects of school quality. This conceptualization is criticized as deceptive as Moodie questioned whose purpose did schools fulfill and how could fitness be assessed (as cited by Harvey, 2006). The various perspectives on the purpose of education and schooling add another layer of complexity to understanding school quality. Burbules (2004) argues that the means to an end dichotomy should be disrupted because "defining one's aims and purposes is one thing and then deciding on effective means for achieving them is something else." Burbules' warning is warranted when thinking about defining school quality for African American students and echoes Harvey's differentiation between quality as a concept and quality as a mechanism.

Relevance. Barrett et al (2006) loosely refers to relevance as in relation to human development but does not provide much context for what this means. Relevance is particularly important when considering the needs of African American students. Burbules (2004) discusses how schools operate to reproduce current social structures; he states that from some perspectives "education inevitably impose a dominant set of cultural norms and values that direct the learning of 'others' into acceptable pathways." Gloria Ladson-Billings (1994) coined the term culturally relevant teaching that she defines as "a pedagogy that empowers students intellectually, socially, emotionally, and politically by using cultural referents to impart knowledge, skills, and attitudes." Culturally relevant and responsive pedagogy affirm African American students' culture, history, and needs. Ladson-Billings (1995, p. 160) identifies three criteria for culturally responsive teaching: (a) students must experience academic success, (b) student must develop and/or maintain

cultural competence, (c) students must develop a critical consciousness through which they challenge the status quo of the current social order.

The literature demonstrates that many of the ways we've come to understand school quality is oversimplified and heavily reliant upon quantitative measures and data (Price, 2016). These conceptualizations as effectiveness, efficiency, excellence, economic, equity, fitness-for-purpose, and relevance provide an overview of non-equity based perspectives on school quality. The perspective that is most prevalent in school quality literature is that of effectiveness that heavily emphasizes the use of standardized test as its mechanism. This perspective of school quality maintains systems that ignore and de-prioritize stakeholders with needs that cannot be met through current conceptualizations of school quality, like students, parents, and their communities at large. Burbules questions, "if the very process of identifying aims and teaching in ways that provide opportunities for some to succeed inherently serves to undermine the opportunities of others, then how do we act in good conscience?" He urges us to think about what makes schools constraining or liberating by considering the historical and institutional study of how and why certain educational aims have become important.

2.3.2 Equity-based School Quality

While non-equity based conceptualizations of school quality address equity marginally, equity-based conceptualizations critically center equity as the goal, purpose, and expectation of schools. The final perspective of defining school quality is measuring a school's transformative potential. School quality as transformative potential positions schools as the locus for social progress and change. Harvey (2006) describes this

conceptualization of school quality as enhancing and empowering students to increase learning. Empowering the student to participate in his or her schooling enables them to make decisions regarding their own schooling and transforms the process of schooling itself. The cultural capital and experiences that African American students bring to the classroom is "often times drastically different from mainstream norms and worldviews" (Howard, 2003, p. 197); their meaningful inclusion transforms classrooms by demonstrating that there are multiple ways of knowing and understanding. Challenging exclusive epistemologies is one way that schools can disrupt hegemony to extend epistemology, or the ways of knowing and understanding.

Harvey (2006) provides several processes that capture the mechanisms of transformative school quality, such as student evaluations, meaningful choice and decision making in the classroom, and the development of students' critical analysis skills. These mechanisms empower students to be agents of their own education. The conceptualization of school quality as transformative potential encompasses educational approaches such as transformative education, emancipatory or liberatory education, and critical pedagogy. All three of these approaches share striking similarities in philosophy, values, and political stances. Mezirow (1996) defines transformative education as "learning [that] is understood as a process of using a prior interpretation to construe a new or revised interpretation of the meaning of one's experience in order to guide future action" (p.162). Emancipatory education is rooted by the philosopher Paulo Freire who advocated for transformation through problem solving using a critically conscious perspective that frees students from the oppressive elements of society. Marsh (2016) describes critical pedagogy as "recognizing that education is not neutral, critical pedagogy

scholars, educators, and activists situate education, teaching, and learning as sites of contestation and radical possibility" (p. 15).

The commonality between these approaches to education is educating all students so that they have the skills, competencies, and knowledge to challenge power imbalances in society and build a world where the opportunity to achieve American ideals such as justice, freedom, and success are unburdened by systemic barriers that marginalized groups often face. Knowles (2012) who studied emancipatory pedagogy within the Native American context warns that emancipatory epistemology also comes with a set of assumptions about democracy and engagement, and that in the Native American context sovereignty is valued over democracy. White Americans can claim democracy in ways that operate very differently for people of color because White people are currently the majority population. Put simply, democracy in the United States favors and protects whiteness; it is also a rationale used to go to war with other countries teetering a delicate line between democracy, capitalism, and colonization. While democracy may seem clearly like the best form of government to some, sovereignty allows Native Americans to maintain their rights to self-determination, self-government, and life in accordance to their own cultural values, traditions, and norms, as opposed to those that would be forced through democracy. The various ways of thinking, knowing, and doing illustrate the necessity of a critical lens to undergird the meaning of equity based school quality.

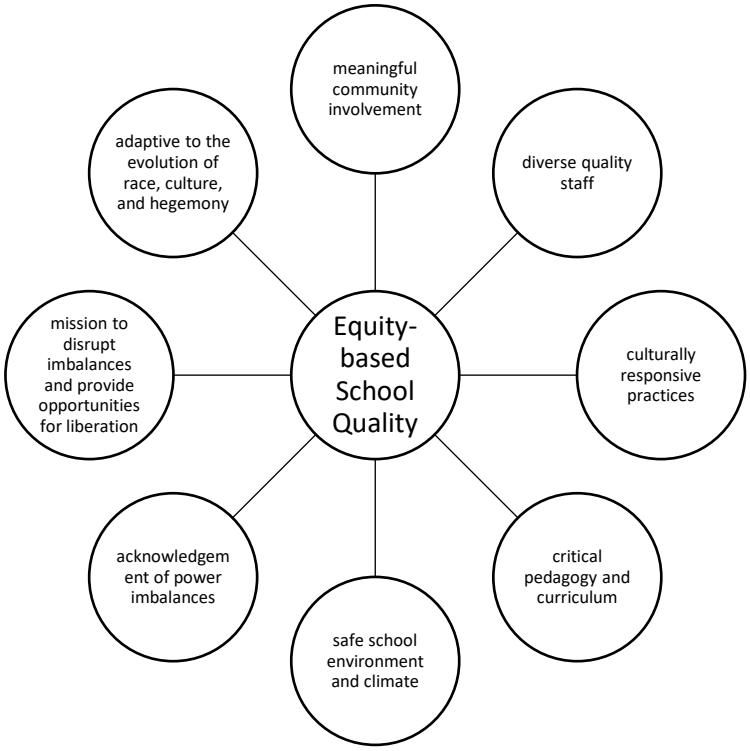
When the focus of schooling is on the transformation of society, the indicators of quality reflect those values. Non-equity based conceptualizations of school quality focused primarily on standardized test scores, and to a lesser extent economic potential, school choice, and behavior management without regard to institutional racism and the

marginalization of African Americans. Equity based conceptualizations of school quality affirm that African American students are entitled to an education that affirms their being, dignity, culture, history, and humanity. These kinds of schools are transformative, critical, and liberatory in nature as opposed to non-equity based schools that are functionally restrictive, confining African American students' experiences and opportunities through various policies and practices. Persell (1977) offers four levels of analysis to explain educational inequalities: societal, institutional, interpersonal, and intrapsychic. This same multilevel analysis can be used to theorize how equity operates in schools so that it can be measured. The societal level refers to a class analysis that examines the distribution of resources, authority, and ideology. The institutional level refers to the operations of dominance and oppression within institutions. The interpersonal level refers to the relationships and interactions between individuals and groups. The intrapsychic level refers to an individual's conceptualization of his or her own humanity that has been shaped by interactions with others.

Applying a multilevel analysis of the transformative perspective of school quality, a high quality school should: (a) meaningfully include parents and communities in schools and decision making, (b) be diverse across quality administrative, supportive, and classroom staffing with the expectation that they are agents of change, (c) utilize culturally responsive practices such as culturally responsive teaching, testing, and assessment and restorative justice, (d) implement critical pedagogy and curriculum, (e) ensure a safe school environment and climate, (f) acknowledges power imbalances, (g) have the mission to provide students with opportunities to liberate themselves from them

and (h) be adaptive as the meaning of race, culture, and racism, and ultimately hegemony, evolves over time.

Figure 1. Components of Equity-based School Quality



In practice, one aspect of a quality school is decentralization or any organizational structures in which the community is able to fully and meaningfully participate in the school (Leu, 2005). “In education, decentralization has had a significant impact by empowering communities to take increased responsibility for schools and empowering teachers and school leaders to take greater control of their practice and responsibility for their professional development” (Leu, 2005, p.2).

According to Medina and Riconscente (2005), schools must be accountable to the communities they reside in, and quality should be defined by their vision of quality. They argue that,

> It does not even happen in an isolated school building, since the school is not the propaedeutical step toward a future participation in society. Like a Russian doll, the school is already within a larger community and should be driven and guided by the same principles as that larger community. (2005, p. 7)

Medina and Riconscente's critique broadly asks for whose society are we preparing students to become citizens of? If the local community is not actively and meaningfully engaged in decision making in the schools, how can their values, beliefs, and culture, the same of the students who attend the school, be represented so that students are prepared to participate in those communities? This critique aligns with Leu's call that school quality be locally defined (2005). Medina and Riconscente suggest that to understand school quality, first communities "must develop a vision of education," second be structured in a way that communities can take ownership of schools and government serves as a supportive role to communities. Price (2016) suggests that school quality be measured through internal evaluations by students, parents, and teachers. His research found that the perceived bias of internal evaluations by the local community is not as much as a threat to the validity of evaluations.

Diverse and quality staffing of schools are crucial to the overall quality of the school. Gagnon and Mattingly (2015) applied an equity lens to study school quality in regard to teacher hiring and retention. They found that failing schools are often characterized by high teacher turnover rates. Gagnon and Mattingly argued that teachers

at schools with high turnover rates have a difficult time establishing relationships with students and getting to know them. They defined the proportion of novice teachers in a school as an indicator of quality. They found that socioeconomic status, race, and location were all predictors of higher rates of novice teachers. They also found the teacher turnover rates were further exacerbated by training programs like Teach For America, which only requires two years of service in return for loan forgiveness and educational awards for graduate school.

The use of different indicators in equity based conceptualizations of school quality also require different expected outcomes than those associated with non-equity based conceptualizations of school quality, like academic achievement. In *Beyond the Big Test*, Sedlacek (2004) argues that non-cognitive factors better predict the successes of non-traditional college students. Although language like "nontraditional" others non-White students, he found eight factors that contribute to high school students' college readiness. His seminal work illustrates that there are outcomes beyond test scores that can predict student success. Sommerfeld (2011) re-orients non-cognitive factors as non-academic factors to be encompass the various ways researchers use the term. In this proposal, non-academic factors are alternative outcomes that better align with equity-based conceptualizations of school quality. These outcomes include feelings of empowerment, developing critical consciousness, strong racial and cultural identity, positive self-esteem, a knowledge of self and others, critical thinking skills and a problem-solving orientation, strong community relationships, high graduation rates, low disciplinary rates, high graduation rates, and high satisfaction with students' educational experiences. To reiterate sentiments in the introduction, while these outcomes depart from the use of standardized

test scores and indicators of equity based schools focus more on developing critical consciousness than algebra, it is not meant to suggest that academic skills in math, reading, history, science, art, and music are not important. However, students cannot develop a critical consciousness with academic skills, but they can develop academic skills without a critical consciousness.

The biggest critiques of paradigms that contribute to the construction of the conceptualization of equity based school quality, is that these conceptualizations are not operationalized and there is little empirical evidence that supports these approaches. Operationalizing equity can help parents, communities, schools, and districts make better and more meaningful data based decisions. Additionally, operationalizing equity can prevent the symbolic adaptation of equity that co-opts the real need for transformative schools. This dissertation proposes to operationalize equity quantitatively and explore measuring equity using common data collected on schools.

CHAPTER 3: METHODS

The imperative to provide equitable educational experiences for African American students, and other marginalized groups, are pervading elements in education dialogues. The literature review illustrates the limitation of uncritical conceptualizations of equity and their impact on perpetuating inequity. In this paper, equity is conceived as a measure of school quality, which prioritizes school characteristics over student characteristics. To critically analyze school quality, I employ a critical quantitative analysis using the High School Longitudinal Study (HSLS). This research is guided by the following questions:

1. How can equity be critically operationalized in the HSLS dataset?
2. What is the relationships between equity in schools and student outcomes?
    a. What is the relationship between math achievement and the equity in staff quality, relationships, staff perceptions, and school offerings?
    b. What is the relationship between math identity and the equity in staff quality, relationships, staff perceptions, and school offerings?
    c. What is the relationship between math efficacy and the equity in staff quality, relationships, staff perceptions, and school offerings?
    d. What is the relationship between math utility and the equity in staff quality, relationships, staff perceptions, and school offerings?
    e. What is the relationship between math interest and the equity in staff quality, relationships, staff perceptions, and school offerings?
3. Does access to equitable educational experiences in schools predict racial disparities?

a. What is the probability that African American students attend high quality schools compared to their peers?

This chapter provides an overview of critical quantitative analysis, HSLS, the research sample, selected variables, and data analysis strategies.

3.1 CRITICAL QUANTITATIVE INQUIRY

In 2007, Frances Stage edited a special edition of the *New Directions for Institutional Research* Journal that on critical quantitative analysis. This volume demonstrated the importance of using a critical framework to conduct quantitative analysis, specifically focusing on the questions scholars ask. The following two special editions that came out in 2014 and 2015 addressed the methods and analysis components of critical quantitative analysis. Critical Quantitative Analysis or Inquiry is an appropriate methodology for equity-based research, like this dissertation. These three special editions informed the methodology and research design for this dissertation.

Critical Quantitative Inquiry is grounded in the tradition of critical theory, which centers dominance, oppression, values, history, and context as essential to conducting critical research (Stage, 2007a). According to Stage and Wells (2014), a quantitative criticalist describes "a researcher who used quantitative methods to represent educational processes and outcomes to reveal inequities and to identify perpetuation of those that were systemic. The term also included researchers who question models, measures, and analytical practices, in order to ensure equity when describing educational experiences" (p. 1). Stage (2007a) compared critical quantitative inquiry to critical and positivist-post positivist inquiry (see table 1). It is important to note that what distinguishes critical

quantitative inquiry is not necessarily its research methods, but its research motivation. Critical quantitative inquiry seeks to question models, rather than verifying previously existing and problematic models, investigate, and move towards equity.

Table 1
Stage's (2007a) Table of Methods and Motivations for Research Paradigms

	Critical	**Critical Quantitative**	**Positivist-Postpositivist**
Research Methods	In-depth	Broad	Broad
Scope	Interpretive	Generalizable	Generalizable
Findings	Individual	Group	Group
Data	Idiographic	Aggregate	Aggregate
Results	Context dependent	Context independent	Context independent
Research Motivation			
Questions	Model questioning	Model questioning modification	Model verification confirmation
Goals	Description	Investigation	Explanation
Outcomes	Equity	Equity	Fairness

These problematic models and research exist within a context characterized by complex histories of oppression that can be reflected in the measures and research that are collected and conducted today (Conway, 2014; Faircloth, 2014). Faircloth's article on American Indians and Alaskan Natives discusses the purpose of education to "civilize and Christianize" indigenous people, leading to a loss of culture, language, and history (2014). Conway discussed similar challenges of immigrant students transitioning from high school to college with the expectations that they leave their cultures at home. In both instances, marginalized students' success is contingent on their ability to assimilate which reaffirms the disregard and perceived lack of importance of their cultures. Several contributors for the special editions cite the Tinto model as contributing to the

perpetuation of dominance over marginalized groups. The Tinto model of college success was developed through research on an exclusive elite group of students and as such is criticized for being culturally insensitive and irrelevant. The wide spread acceptance and use of the Tinto model demonstrates how the exclusion of marginalized students can be normalized in both research and practices. Stage (2007) summarizes the implications of non-critical research by stating "basing new reform on research that was not critical in the past, we perpetuate inequities" (Stage, 2007).

The critical questioning of research questions posed, frameworks, methods, measures, interpretations, analysis, and implications was a salient theme amongst all three special issues (Stage, 2007a; Stage, 2007b, Rios-Aguilar, 2014). Several articles emphasize the importance of the research questions. In particular, Baez (2007) discusses the ramifications for minimizing complex contexts in favor of simpler questions. In other words, the parsimony that is often sought, silences the complex realities of marginalized groups whose reduction is another instance of silencing or re-writing their experiences. Baez challenges quantitative criticalists to question how research can be transformative and disrupt cycles of domination.

Quantitative methods are also criticized for marginalizing underrepresented groups through variable selection in research design (Rios-Aguilar, 2014). Studies that collect data that represent students' family lives, resistance, or persistence against oppressive elements, but neglect to collect data on how institutions contribute to or disrupt these elements, is an example of how the status quo is maintained in research. Furthermore, models that are not relevant to marginalized students like Tinto based programs, have not resulted in the increased completion among underrepresented students (Rios-Aguilera,

2014). Despite policies and programs, established the prevalence of disparities consistently persist over time (Teranishi, 2007). Perhaps if models included variables relevant to marginalized students' experiences and aspirations, their implication to practice would lead to increased success for marginalized students.

The analysis of quantitative methods can also be problematic. Analyses that compare African American students to their White counterparts reaffirm white students as the golden standard for which all students should aspire to. Rios-Aguilera suggests that researchers use effect coding instead which would compare specific groups of students to expected averages for all students. A popular standard for rigorous research is statistical significance, a somewhat subjective measure that represents the majority of the sample's experiences which can disregard non-majority participants to the margins (Stage, 2007b). A key consideration for research posed by Rios-Aguilar (2014) is which methods can "be used to unmask inequities" (p.98). She states that overreliance on statistical significance is a "deeply flawed substitute for thoughtful analyses" and that researchers should emphasize significance *and* effect sizes (p.99).

This line of questioning of research questions, methods, and analyses extends to the critical theories suggested here and to researchers themselves as well (Ellsworth, 1999). The volume charges scholars with three tasks:

> (a) use data to represent educational processes and outcomes on a large scale to reveal inequities and to identify social or institutional perpetuation of systematic inequalities in such processes, and outcomes

(b) question the models, measures and analytic practices of quantitative research in order to offer competing models, measures, and analytic practices that better describe the experiences of those who have not been adequately represented

(c) conduct culturally relevant research by studying institution and people in context (Stage &Wells, 2014).

3.2 HIGH SCHOOL LONGITUDINAL STUDY

The High School Longitudinal Study (HSLS) was designed to collect information about student experiences over an extended period of time with an emphasis on math and science. It is the fifth installation of the National Center for Education Statistics (NCES) Educational Longitudinal Series. The first in the series was the National Longitudinal Study of 1972 (NLS-72), which consisted of six data collection periods up until 1986. Like all educational longitudinal studies by NCES, NLS-72 focused on student trajectories beyond high school with special attention to postsecondary education and workforce experiences. Following NLS-72, was the High School and Beyond longitudinal study (HS&B), National Education Study of 1988 (NELS88), and finally the Educational Longitudinal Study of 2002 (ELS) which predicated HSLS. All of these studies have been instrumental in education and guiding educational reform (cite).

The HSLS dataset was designed to address the following three research questions: (a) what are students' trajectories from the beginning of high school into postsecondary education, the workforce, and beyond?; (b) what majors and careers do students decided to pursue when, why, and how?; and (c) how do students choose science, technology, engineering, and math (STEM) courses, majors, and careers? (Ingels et al, 2011). The

HSLS study is comprised of four waves of data collection. Baseline data was collected in 2009, the first follow up survey took place in 2012, and forth coming data collection will take place in 2016 and 2021. Over the course of data collection, data sources included student, parent, teacher, counselor, and administrator surveys, as well as school transcripts. Table 2 illustrates which data source was included for each data collection period.

Table 2
Data Sources for HSLS

Data Collection Points	**Student Survey**	**Parent Survey**	**Counselor Survey**	**School Admin Survey**	**Teacher Survey**	**Transcript**
Base Year (BY)	X	X	X	X	X	
First follow-up (F1)	X	X	X	X		
Second follow-up (F2)	X					X
Third follow-up (F3)	X					X

The student survey is the only data source collected in every wave of the HSLS dataset, it included over 100 items that measured student experiences in high school and beyond. The parent, counselor, and school administrator surveys were only collected in the base year and during the first follow up. These surveys collected similar information to the student surveys, as well as information about the schools. The teacher survey was only conducted during the base year and collected school information and information about teachers' perspectives. At the time of this study, only base year and first follow up data were available for analysis. This research includes data collected on the teacher

survey in the base year, and student and counselor survey collected in the base year and first follow up.

3.3 SAMPLE

HSLS included more than 20,000 students in the 9th grade in 2009 from 944 public and private schools. The students in the dataset make up a nationally representative population. The sample used in this research only included students who took math during the base year. Students who did not take math or had legitimate skips were excluded from this study. There were a total of 13,486 students included in the sample; African American students comprised on 9% of the sample (n=1209), American Indians were .5% of the sample (n=75), Asian Americans were 9.8% of the sample (n= 1375), Hispanic students who did not specify a race comprised 1.6% of the sample (n=229), Hispanics who specified a race were 13.5% of the sample (n=1,910), Multiracial students were 8.2% of the sample (n= 1,152), Pacific Islanders represented .4% of the sample (n=62), and White students represented 53.2% of the sample (n=7,474). This research focused primarily on the experiences of African American students.

The choice to center African American students' experiences with equity in this research allowed their experiences to be extracted from the larger data set, preventing their marginalization in overall analysis. Focusing primarily on African American students' experiences also required that operational definitions of equity do not use the relative performance of other peer groups to determine the extent of equity that African Americans experienced. The sample was evenly balanced regarding gender, 597 females and 612 males were included in this study. More than half of the sample includes

students from households that make less than $55,000. Tables 3, 4, and 5 presents student, school, and staff profiles that are representative of the primary perspectives and experiences included in this study. Almost 82% of the sample attended public schools, 27.2% of students went to schools in the city (n=329), 43.9% of students attended schools in the suburbs (n=531), 8.1% of students attended school in the town (n=98), and 20.8% attended schools in rural areas (n=251). Tables 6, 7, and 8 represent student, school, and staff profiles for all students in the sample.

Table 3
African American Student Profile

Variable	**Responses**	**Frequency**
Sex		
	Male	612
	Female	597
IEP		
	No IEP	358
	IEP	112
Family Income		
	Less than $15,000	122
	$15,000 - $35,000	196
	$35,000 - $55,000	146
	$55,000 - $75,000	110
	$75,000 - $95,000	79
	More than $95,000	172
SES		
	Low	191
	Middle	682
	High	232

Table 4
African American School Experience Profile

Variable	Responses	Frequency
Career or Education Plan		
	Has a Career and/or Education Plan	881
	Has Neither	212
Credit Recovery Available		
	No	326
	Yes	767
Outside Support Available		
	No	148
	Yes	945
Drop Out Prevention Program		
	No	569
	Yes	518
AP Courses Offered		
	0-5	242
	6-10	332
	11-15	316
	16+	263
Location		
	City	329
	Suburb	531
	Town	98
	Rural	251
Control		
	Public	983
	Private	226

Table 5
African American Experience with Staff Quality Profile

Variable	**Responses**	**Frequency**
Alternative Certification		
	No	655
	Yes	167
Type of Certification		
	Complete Certification	643
	Partial Certification	111
	Holds No Certification	68
Teacher's Years Experience		
	Novice (<3 years)	238
	Veteran (3+ years)	563
Residency		
	New Resident	343
	Established Resident	477
Highest Degree Earned		
	Bachelor's	414
	Master's	379
	Educational Specialist diploma	15
	Ph.D./M.D./law degree/other	14
Principal's Years Experience		
	Novice (<5 years)	420
	Veteran (5+ years)	501

Table 6
All Students' Profile

Variable	Responses	Frequency
Race	American Indian	75
	Asian	1375
	African American	1209
	Hispanic, no race specified	229
	Hispanic, race specified	1910
	Multiracial	1152
	Pacific Islander	62
	White	7474
Sex		
	Male	7163
	Female	6887
IEP		
	No IEP	358
	IEP	112
Family Income		
	Less than $15,000	723
	$15,000 - $35,000	1546
	$35,000 - $55,000	1638
	$55,000 - $75,000	1546
	$75,000 - $95,000	1268
	More than $95,000	3728
SES		
	Low	1586
	Middle	7307
	High	4036

Table 7
All Students' School Experience Profile

Variable	Responses	Frequency
Career or Education Plan		
	Has a Career and/or Education Plan	9746
	Has Neither	2819
Credit Recovery Available		
	No	3746
	Yes	8836
Outside Support Available		
	No	1919
	Yes	10663
Drop Out Prevention Program		
	No	7119
	Yes	5367
AP Courses Offered		
	0-5	2875
	6-10	3720
	11-15	3365
	16+	3582
Location		
	City	329
	Suburb	531
	Town	98
	Rural	251
Control		
	Public	983
	Private	226

Table 8
All Students' Experience with Staff Quality Profile

Variable	Responses	Frequency
Alternative Certification		
	No	8698
	Yes	1810
Type of Certification		
	Complete Certification	8489
	Partial Certification	1266
	Holds No Certification	764
Teacher's Years Experience		
	Novice (<3 years)	2567
	Veteran (3+ years)	7768
Residency		
	New Resident	3870
	Established Resident	6642
Highest Degree Earned		
	Bachelor's	4983
	Master's	5194
	Educational Specialist diploma	207
	Ph.D./M.D./law degree/other	150
Principal's Years Experience		
	Novice (<5 years)	5172
	Veteran (5+ years)	6618

3.4 VARIABLES

The literature review conceptualized equity as eight essential components of school quality that included: (a) the meaningfully inclusion of parents and communities in schools and decision making, (b) diverse and quality administrative, supportive, and classroom staffing with the expectation that they are agents of change, (c) the utilization of culturally responsive practices such as culturally responsive teaching, testing, and assessment and restorative justice, (d) the implementation of critical pedagogy and

curriculum, (e) a safe school environment and climate, (f) acknowledgment of power imbalances, (g) a mission to provide students with opportunities to liberate themselves power imbalances and (h) the ability to be adaptive to the evolution of race, culture, and racism, and hegemony. After carefully reviewing the student, teacher, counselor and administrator survey items available in the public HSLS data set, it was clear that the data set could not provide data for a critical conceptualization of equity. Instead, four dimensions of equity were constructed to contribute to a definition and explanation of equity within the constraints of the data set, making this dissertation exploratory in nature. Since school level data is not available in the HSLS data set, these four dimensions should be interpreted as students' experiences with equity in their respective schools.

The four dimensions of equity were defined as Staff Quality, Student Perceived Relationships, Staff Perceptions, and School Offerings. Staff Quality measures the credentials and experience of math teachers. Student Perceived Relationships describe how students felt about their math teachers. Staff Perceptions measured the staff beliefs about students, their families, and other staff. School Offerings describe the non-human resources that schools provide to students. Each of these four dimensions served as independent or predicator variables in subsequent analyses. Dependent or outcome variables were five student outcomes, math achievement, math identity, math efficacy, math utility, and math interest. The use of student outcomes as outcome variables are a departure in school quality literature, which uses student outcomes as predictors of school quality. Only variables from the base year (which used "X1" as a prefix in variable names) and first year follow up (which used "X2" as the prefix in variable names) were

included from the student, teacher, counselors, and administrator surveys. The next section of this chapter describes the variables included in this study.

3.4.1 Demographic Variables

Demographic variables were included to understand how different groups of participants were impacted by explanatory variables. The demographic variables used in this study were: student's sex (X1SEX), students' race (X1RACE), socioeconomic status (X1SES), household income (X1FAMINCOME), school control (X1CONTROL), school location (X1LOCALE), and whether a student had an IEP (X1IEPFLAG). Tables 3 and 6 provides frequencies for each demographic variable for African American students and for all students in the sample respectively.

3.4.2 Staff Quality

Variables categorized as staff quality describe students' math teachers and principal's credentials and experience. The Staff Quality dimension included seven variables: M1ALTCERT, M1CERTTYPE, M1MTHYRS912, RESIDENCY (M1SCHYRS), M1HIDEG, M1BASCHED, and A1YRSADMIN. Table 9 provides the variable names for item included in this dimension of equity. M1ALTCERT measures whether students' math teachers were alternatively certified using a dummy code; alternative certification = 0, and no alternative certification = 1. M1CERTTYPE measures which certification students' math teachers obtained with the following response scale, 1= Regular state certification, 2=Certificate issued with probationary period, 3= Cert requiring additional coursework, 4= Cert issued; must complete program, and 5= Holds

none of these certs in the state. M1CERTTYPE was recoded into three response variables, 1= Not Certified, 2= Partially Certified, and 3= Certified. M1HIDEG measured the highest degree student's math teacher obtained and used the following response scale, 3=Bachelor's degree, 4=Master's degree, 5=Educational Specialist Diploma, and 6=Ph.D/M.D./law degree/other prof degree.

M1BASCHED measured whether students' math teachers obtained a bachelor's degree in education which had the following response scale, 0= No and 1= Yes. M1MTHRYS912 measured students' math teachers years of experience teaching any subject in high school; M1MTHRYS912 was recoded using the following scale, 1=Novice and 2=Experienced. M1SCHYRS or RESIDENCY measures the amount of time students' math teachers have taught at their current school, M1SCHYRS was recoded using the following scale, 1= New Resident and 2= Established Resident. The decision to use categorical data for math teachers' experience and residency was justified based on previous research that examined teacher's years of experience and turnover rates on student outcomes. Findings suggest that there are differences between novice and experienced teachers, and differences between teachers who have taught at schools for at least two years (Gagnon & Mattingly, 2015; Elfers, Plecki, & Knapp, 2006). Math teachers with less than 3 years of experience were defined as novices, and math teachers with 3 years or more experience were defined as experienced. A1YRSADMIN measures students' principal's years of experience as principal of any school; this variable was also a continuous scale using the following categorical responses, 1=Novice and 2=Experienced. Research suggests that it takes principals five years to fully get into the role of being principal (Seashore-Louis, et al. 2010). Principals with less than 5 years of

experience were defined as Novice, and principals with 5 years or more of experience were defined as Experienced.

Table 9

Staff Quality Dimension

Variable Name	Variable Label
M1ALTCERT	M1 A16 Math teacher entered profession via alternative certification program
M1CERTTYPE	M1 A17 Type of math teaching certificate currently held by math teacher
TOTALEXP (M1MTHYRS912)	M1 A19 Years math teacher has taught high school math
RESIDENCY (M1SCHYRS)	M1 A21 Years math teacher has taught any subject/grade at current school
M1HIDEG	M1 A04 Math teacher's highest degree earned
M1BASCHED	M1 A11 Math teacher's BA/BS degree awarded by education department
PRINEXP (A1YRSADMIN)	A1 E10 Years served as principal of any school

3.4.3 Student Perceived Relationships.

Variables categorized as student perceived relationships were selected from the student base year survey. A total of 11 items were included in this dimension and were measured using the same response scale, 1= Strongly Agree, 2= Agree, 3= Disagree, and 4= Strongly Disagree. Table 10 provides variable labels for each variable included in this dimension of equity. These items included statements like, “There are always teachers or other adults in your school that you can talk to if you have a problem” and “Your math teacher treats every student fairly.” All items in this scale except for S1MTCHMFDIFF and S1MTCHEASY were reversed coded so that 4= Strongly Agree, 3= Agree, 2= Disagree, and 1= Strongly Disagree. S1MTCHMFDIFF and S1MTCHEASY kept their initial coding of 1= Strongly Agree, 2= Agree, 3= Disagree, and 4= Strongly Disagree. The higher the score for the relationships dimension, the better the relationship between students and teachers. A principal components analysis was conducted to measure whether variables statistically comprise a subscale. Research question 1 in the results section describes how equity was critically construction within this dimension.

Table 10

Student Perceived Relationship Dimension Variables

Variable Name	Variable Label
S1TALKPROB	S1 E01C 9th grader has teacher/adult in school he/she can talk to about problems
S1PROUD	S1 E01B 9th grader is proud to be part of his/her school
S1MTCHVALUES	S1 C11A 9th grader's fall 2009 math teacher values/listens to students' ideas
S1MTCHRESPCT	S1 C11B 9th grader's fall 2009 math teacher treats students with respect
S1MTCHFAIR	S1 C11C 9th grader's fall 2009 math teacher treats every student fairly
S1MTCHCONF	S1 C11D 9th grader's fall 2009 math teacher thinks all student can be successful
S1MTCHMISTKE	S1 C11E 9th grader's fall 2009 math teacher thinks mistakes OK if students learn
S1MTCHTREAT	S1 C11F 9th grader's fall 2009 math teacher treats some kids better than others
S1MTCHINTRST	S1 C11G 9th grader's fall 2009 math teacher makes math interesting
S1MTCHMFDIFF	S1 C11H 9th grader's fall 2009 math teacher treats males/females differently
S1MTCHEASY	S1 C11I 9th grader's fall 2009 math teacher makes math easy to understand

3.4.4 Staff Perceptions

Variables categorized as staff perceptions represent the beliefs of students' math teacher, counselor, and principal. Staff Perceptions variables include the following 11 variables X1TMEXP, X1TMRESP, X1TMEFF, X1COUPERTEA, X1COUPERCOU, X1COUPERPRI, M1HOMEFX, M1FAMILY, M1DISCIPLINE, M1STUACHIEVE,

M1PARENT. The first six variables, X1TMEXP, X1TMRESP, X1TMEFF, X1COUPERTEA, X1COUPERCOU, X1COUPERPRI, are composite variables that were including in the HSLS data set the were calculated using a principal components analysis. The last five variables, M1HOMEFX, M1FAMILY, M1DISCIPLINE, M1STUACHIEVE, M1PARENT, were items on the teacher survey in the base year. These five variables were measured on the same Likert response scale, 1=Strongly Agree, 2=Agree, 3=Disagree, 4=Strongly Disagree. These variables were conceptually thought to measure different perspectives of school staff, perceptions about teaching and deficit orientation. Deficit orientation refers to teachers' assumptions about students, their families, and their capabilities. Items that describe deficit orientation include statements like "when it comes right down to it, you really can not do much because most of a student's motivation and performance depends on their home environment" and "the amount a student can learn is primarily related to family background." The higher the score for deficit orientation, the more oriented math teachers are to deficit thinking. The Appendix provides the variables used to construct each of the provided composite variables included in this dimension. Table 11 provides the variable labels for each item included in the Staff perceptions dimension. A principal components analysis was used to determine if Staff Perception variables were fit to construct a scale.

Table 11
Staff Perspectives Dimension

Variable Name	Variable Label
Teaching	
X1TMEXP	X1 Scale of math teacher's perceptions of math teachers' expectations
X1TMRESP	X1 Scale of math teacher's perceptions of collective responsibility
X1TMEFF	X1 Scale of math teacher's self-efficacy
Deficit Orientation	
M1HOMEFX	M1 D04H Cannot do much b/c student motivation/performance depends on home
M1FAMILY	M1 D04A Amount a student can learn is primarily related to family background
M1DISCIPLINE,	M1 D04B Students not disciplined at home not likely to accept school discipline
M1STUACHIEVE	M1 D04C Teachers are limited b/c home environment influences student achievement
M1PARENT	M1 D04D If parents would do more for children teacher could do more for students

3.4.5 School Offerings

The school offerings dimensions represented students' access to equitable opportunities to learn. This dimension is made up of the following 5 variables, C2NUMAP, C1DROPOUT, C1CREDREC, C1OUTSIDE, and C1PLAN. Table 12 provides the variable labels for each of the variables included in the School Offerings dimension. C2NUMAP measured the number of AP courses students had access to. This variable was recoded using the distribution of frequencies of AP courses. About 25% of students attended schools with 1-5 AP courses, 6-10 AP Courses, 11-15 AP courses, and 16 or more AP courses respectively. These percentages were used to categorize AP courses, 1= 1-5 AP courses, 2= 6-10 AP courses, 3= 11-15 AP courses, and 4= 16+ AP courses. C1DROPOUT measured whether students attended a school that offered a

dropout prevention program, 0= Did not offer a dropout program and 1= Offered a dropout program. C1REDREC measured whether students attended a school that offered a credit recovery program, 0= Did not offer a credit recovery program and 1= Offered a credit recovery program. C1OUTSIDE measured whether students attended a school that provided support outside of schools, 0= Does not offer outside support and 1= Does offer outside support. C1PLAN measured whether students attended a school that required students to have an education or career plan. C1PLAN responses were as follows, 1= A combined career and education plan, 2= A career plan only, 3= An education plan only, and 4= Neither a career plan or education plan. C1PLAN was recoded using the following response scale, 1= Does not require an education or career plan and 2= Requires an education and/or career plan. The higher the score for School Offerings the students attend schools with more to offer.

Table 12
School Offerings Variables Dimension

Variable Name	Variable Label
C2NUMAP	C2 C07 Number of AP courses offered
C1DROPOUT	C1 B24 School has a formal dropout prevention program for high school students
C1CREDREC	C1 B19D Off-track/day/evening/summer school credit recovery program is available
C1OUTSIDE	C1 B19F Support outside the school day for students needing extra help
C1PLAN	C1 A13 Students are required to have a career or education plan

3.4.6 Outcome Variables

Five student outcome variables were used to determine whether equity dimensions accounted for the variance in students' experiences in equity. The five outcome variables included math achievement (X1TXMTSCOR, X2TXMTSCOR), math identity (X1MTHID, X2MTHID), math efficacy (X1MTHEFF, X2MTHEFF), math utility (X1MTHUTI, X2MTHUTI), and math interest (X1MTHINT, X2MTHINT). Math achievement was measured using students standardized math scores. Student identity indicated whether students saw themselves as math people and if they believed other people saw them as math people. Self-efficacy measured students' confidence in doing well on tests and in math courses. Math interest recorded the extent to which students were interested in math courses. Table 13 provides the variables labels for each outcome variable. All five outcome variables were included in the HSLS and was calculated using a principal components analysis. For each variable, the higher the score, the greater the scores in math achievement, identity, efficacy, utility, and interest. These variables were

selected as outcome variables to measure the impact of equity dimensions beyond achievement, to include other factors that may be important to the success of students. The outcome variables were measured in both the base year data collection and the first year follow up data collection on the student surveys.

Table 13

Outcome Variables

Variable Name	**Variable Label**
X1MTHID	X1 Scale of student's mathematics identity
X1MTHEFF	X1 Scale of student's mathematics self-efficacy
X1MTHINT	X1 Scale of student's interest in fall 2009 math course
X1MTHUTI	X1 Scale of student's mathematics utility
X1TXMTSCOR	X1 Mathematics standardized theta score
X2MTHID	X2 Scale of student's mathematics identity
X2MTHEFF	X2 Scale of student's mathematics self-efficacy
X2MTHINT	X2 Scale of student's interest in fall 2009 math course
X2MTHUTI	X2 Scale of student's mathematics utility
X2TXMTSCOR	X2 Mathematics standardized theta score

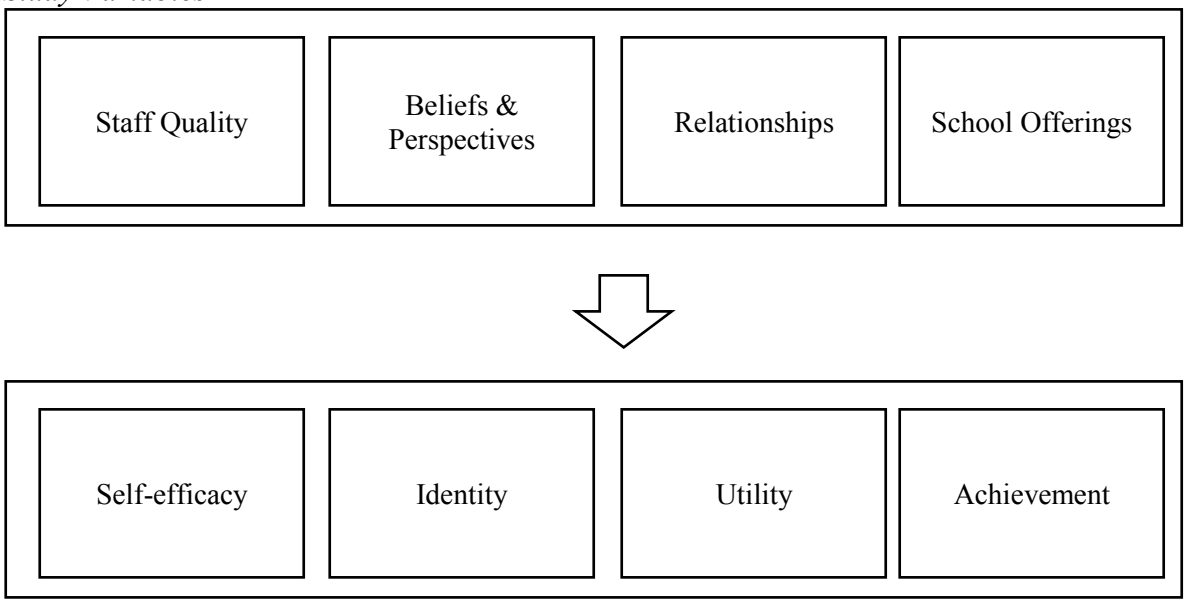
3.5 DATA ANALYSIS

The four dimensions of equity present in the HSLS data set were used to conduct an exploratory study of operationalizing equity. Frequencies and descriptive statistics were conducted on each variable to assess the overall spread variables. All cases with legitimate skip data were deleted from the data set. Descriptive statistics were re-analyzed to ensure that the sample included in analysis represented a variety of student experiences. After cleaning the data set, principal components analyses were used to determine the fit of variables in the Student Perceived Relationships and Staff Perceptions dimension. Once variables were finalized for both dimensions, total scores were calculated for each student and an equity score was assigned by measuring the distance from total scores to the ideal score for each dimension. Staff Quality and School Offerings were not analyzed using principal components analysis due to the differences in response scales across variables. Instead equity was defined as percentage and percent totals were used to calculate the overall scores for both dimensions. The critical construction of equity is described in detail in at the beginning of Chapter four which addresses the first research about how equity can be constructed in the HSLS data set.

After dimension scores were calculated, an analysis of missing data was conducted by multiple imputation used to impute values for missing data. The multiple imputation analyses were computed with five imputations and ten iterations. One of the main goals of this dissertation was to understand the relationship between equity and student outcomes. Figure 1 illustrates a conceptual model and overview of this research. Five multiple regressions were used to determine whether equity dimensions predicted each of the five

student outcomes. A secondary analysis of stepwise regressions compared which predictor variables were important to understanding student outcome for each racial group. Finally, contingency tables were constructed for each dimension of equity and race to understand the relationship between race and access to equitable educational experiences.

Figure 2
Study Variables



3.6 RESEARCHER POSITIONALITY

Imperative to critical research is the belief that while institutions, including schools, are not neutral spaces, neither is research. Researchers' paradigms greatly impact research throughout the entire process from beginning to end. Specifically, our values guide the decisions we make, the questions we choose to answer, and the measures we choose to privilege. In efforts to increase the validity of this dissertation, it is important

that my worldview is transparent as opposed to leaving the reader to decipher my morals, values, and intention. As an African American woman living in the United States, I believe that African American students, and other marginalized groups, deserve an education that will aid in the transformation of our society. A transformation that allows us and them to exist freely beyond the realities of racism and oppression. I believe that schools are obligated to address the educational needs of African American students. I hope that this research will contribute to a growing dialogue about using critical perspectives to improve the education that we provide to African American students.

CHAPTER 4: RESULTS

4.1 INTRODUCTION

The following section describes the results of this research organized by research question. This research used several statistical analyses to address the research questions using a critical quantitative inquiry approach. The focus of this study was to understand how equity in schools explains variance in student outcomes. In this exploratory research, equity is defined as ideal scores that one would expect to find at schools that have those eight components (meaningful involvement, diverse qualified staff, culturally responsive practices, critical pedagogy, safe environment and climate, acknowledgement of power imbalances, liberatory mission and adaptability) of quality schools. Student outcomes (the dependent variables) were defined as math achievement, math identity, math efficacy, math utility, and math interest, and were measured from the same group of students in 2009 and in 2012. In the following analyses, the 2009 student outcomes were used as control variables in the regression models. Predictor or independent variables are the computed scores for each of the equity dimensions: staff quality, student perceived relationships, staff perceptions, and school offerings. In the last research question, the presence of equity was treated as an outcome variable. Presentation of the results of the data analysis are organized by the original research questions. 1. How can equity be critically operationalized in the HSLS data set?

1. What is the relationship between equity in schools and student outcomes?
2. Does access to equitable schools predict racial disparities?
3. Does access to equitable educational experiences in schools predict racial disparities?

4.2 RESEARCH QUESTION: HOW CAN EQUITY BE CRITICALLY OPERATIONALIZED IN THE HSLS DATA SET?

In previous research on disparities in educational experiences, equity is used interchangeably with equality and social justice. These concepts are overwhelmingly measured through disparities between students and schools, focusing on achievement gaps, resource gaps, opportunity gaps and more. To provide better educational experiences for African American students, there must be an understanding of how schools contribute to their educational experiences systematically beyond disparities. Variables in the HSLS data set did not provide enough data to understand equity comprehensively in the way it was conceptualized in the literature review. However, HSLS variables did measure elements of equity that were constructed as four dimensions: staff quality, student perceived relationships, staff perceptions, and school offerings. Conceptually, equitable schools will have high quality staff, positive relationships between students and teachers, staff that have positive perceptions of students and their families, and offer more opportunities for students to learn. These dimensions represent the extent to which equity can be understood within the constraints of the data set. Operationally, equity was measured by defining ideal scores, and the differences between ideal scores and actual scores.

4.2.1 Staff Quality

According to many research studies, teacher quality is the most important component of school quality. Variables associated with teacher quality are often

associated with characteristics such as years of experience, residency, and certification. A Staff Quality score was created for each student, which was computed with math teacher's highest degree, bachelor's degree in education, certification type, alternative certification, experience teaching in high school, and principal's years of experience. All staff quality variables were collected from the HSLS teacher survey, only responses for math teachers were included in analyses. Staff Quality equity was measured in several steps; first, each of the Staff Quality variables were assigned an ideal score. Ideal scores are conceptually the ideal response that one would expect students with equitable experiences to have. For example, the variable "teacher's highest degree" had four responses, Bachelor's degree, Master's degree, Education Specialist Diploma, and a professional degree. Ideally, a teacher should have at least a bachelor's degree, which was coded as "3" in the HSLS data set. To address the various response scales for each Staff Quality variable, all scores were re-expressed as percentages of the ideal score. Therefore, if a teacher reported the ideal score they received 100% of equity which was recorded as a score of 1.0. Tables 14 through 20 illustrate the reconstruction of Staff Quality variables.

Table 14
Highest Degree the Math Teacher Obtained

HIDEG: M1 A04 Math teacher's highest degree earned	
Code	**Response**
1.00	Bachelors
1.25	Masters
1.50	Educational Specialist Diploma
1.75	PhD/MD/law degree/other professional degree

Table 15
Math teacher's BA/BS Awarded by the Education Department

BASCHED: Math teacher's BA/BS degree awarded by education department	
Code	**Response**
.50	No
1.00	Yes

Table 16
Math Teacher's Certification Completion

CERTTYPE: Type of certification the teacher has	
Code	**Response**
.33	No Certification
.67	Partial/Incomplete Certification
1.00	Full Certification

Table 17
Math Teacher's has an Alternative Certificate

ALTCERT: Whether or not the teacher was granted certification alternatively.	
Code	**Response**
1.00	Yes
.50	No

Table 18
Math Teacher's Total Experience Teaching Any Subject in High School

TOTALEXP: Total experience teaching high school, any subject	
Code	**Response**
.50	Novice (≤ 3 years experience)
1.00	Experienced (>3 years experience)

Table 19
Math Teacher's Length of Residency at Current School

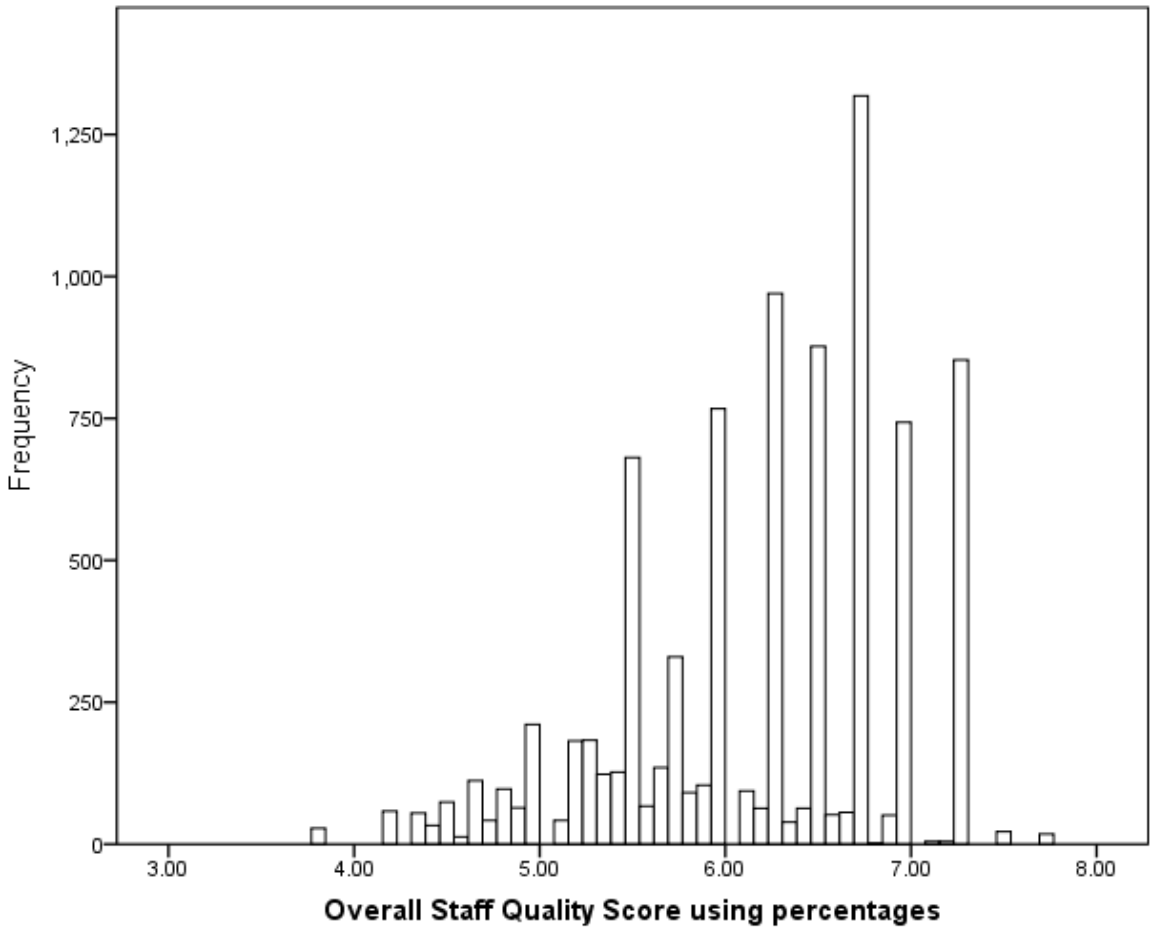
RESIDENCY: Length of residency at current school	
Code	**Response**
.50	New (≤ 3 years experience)
1.00	Established (>3 years experience)

Table 20
Principal's Years of Experience as Principal of Any School

A1ADMIN: Years served as principal of any school	
Code	**Response**
.50	Novice (≤ 5 years experience)
1.00	Experienced (>5 years experience)

Percentage of equity scores were calculated by dividing 100% by the number of response variables. For example, the variable principal's years of experience had two responses, novice and experienced, which resulted in novice experience being re-expressed as 50% of equity (50% of the ideal score), and experienced as 100% of equity (the ideal score). The sum of all staff quality variables represented the Overall Staff Quality Score (OSQS), OSQS = HIDEG + BASCHED + CERTTYPE + ALTCERT + TOTALEXP + RESIDENCY + PRINEXP. This score represents the amount of equity present in all seven variables. OSQS that were equal to or more than 7 had equity present for each Staff Quality variable. OSQS that were less than 7, had different levels of equity for each Staff Quality variable. A categorical equity score (OSQSCAT) was also constructed to measure presence of equity as opposed to the extent of equity measured in the continuous score, OSQS. If the OSQS was equal to or greater than 7, equity was present, if the OSQS was less than 7, than equity was not present. Figure 3 illustrates the distribution of OSQS. For 1,646 students in the data set, equity was present in the Staff Quality dimension; for 7,203 students, equity was not present in the Staff Quality dimension.

Figure 3
Distribution of Overall Staff Quality Scores (OSQS)



4.2.2 Relationships

Previous studies demonstrate the importance between the relationships of students of color and their teachers, and therefore makes up the second dimension of equity. A principal components analysis was conducted on variables that represent students' perceived relationship with their math teacher. All variables for the Relationships dimension were collected from the student surveys, only responses about math teachers were included in analysis. Table 21 includes brief descriptions of each variable. All of the Relationships variables were measured on a Likert scale where 1= Strongly Disagree, 2=

Disagree, 3=Agree, and 4= Strongly Agree. In the original HSLS data set, this scale was reverse coded. Of the eleven variables selected to represent the relationships dimension (S1TALKPROB, S1MVALUES, S1MRESPECT, S1MFAIR, S1MCONF, S1MISTKE, S1MTREAT, S1MINTRST, S1MDIFF, S1MEASY, S1PROUD), 9 variables were used to construct two different components using the direct oblimin rotation. The first run of principal components analysis, indicated that S1TALKPROB and S1PROUD should be dropped from the analysis. Dropping S1TALKPROB and S1PROUD changed the nature of the Relationships dimension to focus solely on students' relationships with teachers. The second principal component analysis was conducted using the remaining seven variables (S1MVALUES, S1MRESPECT, S1MFAIR, S1MCONF, S1MISTKE, S1MTREAT, S1MINTRST, S1MDIFF, S1MEASY) which extracted two components.

Table 21
Relationships Dimension Variables

Variable Name	Variable Label
S1MTCHVALUES	S1 C11A 9th grader's fall 2009 math teacher values/listens to students' ideas
S1MTCHRESPCT	S1 C11B 9th grader's fall 2009 math teacher treats students with respect
S1MTCHFAIR	S1 C11C 9th grader's fall 2009 math teacher treats every student fairly
S1MTCHCONF	S1 C11D 9th grader's fall 2009 math teacher thinks all student can be successful
S1MTCHMISTKE	S1 C11E 9th grader's fall 2009 math teacher thinks mistakes OK if students learn
S1MTCHTREAT	S1 C11F 9th grader's fall 2009 math teacher treats some kids better than others
S1MTCHINTRST	S1 C11G 9th grader's fall 2009 math teacher makes math interesting
S1MTCHMFDIFF	S1 C11H 9th grader's fall 2009 math teacher treats males/females differently
S1MTCHEASY	S1 C11I 9th grader's fall 2009 math teacher makes math easy to understand
S1TALKPROB	S1 E01C 9th grader has teacher/adult in school he/she can talk to about problems
S1PROUD	S1 E01B 9th grader is proud to be part of his/her school

A third and final principal components analysis was ran specifying an extraction of two fixed components. The Kaiser-Meyer Olkin measure of sampling adequacy indicates the dimension is factorable (KMO=.900) exceeding the .6 threshold. The Bartlett's test of sphericity, which measures variable redundancy, was significant at ($x^2(36) = 61179.33, p < .001$), indicating that the variables included in the Relationships dimension are not redundant. Results from the KMO and Barlett's test of sphericity indicate that the data is fit for analysis. The final component selection was determined based on factors that had an eigenvalue greater than 1 and were plotted in front of the "elbow" on the scree plot.

Table 22

Component Matrix[a]

	Component	
	1	2
S1MTCHVALUES	.830	-.163
S1MTCHRESPCT	.854	-.064
S1MTCHFAIR	.858	.030
S1MTCHCONF	.784	-.078
S1MTCHMISTKE	.706	-.186
S1MTCHINTRST	.724	-.284
S1MTCHEASY	.734	-.257
S1MTCHTREAT	.639	.579
S1MTCHMFDIFF	.529	.720

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

Component 1 explained 55.77% of variance and Component 2 explained 11.9% of variance, for a cumulative 67.69% of variance explained. The two components that describe students' relationships with math teachers were defined as positive relationships and bias relationships. The resulting two components were used to calculate two subscales (positive relationships and biased relationships) to measure the Relationships dimension. Several equations were used to compute the Overall Positive Relationships Scores (OPRS). The positive relationships total (PRT) was the sum of component 1 variables, PRT = S1MTCHVALUES + S1MTCHRESPCT + S1MTCHFAIR + S1MTCHCONF + S1MTCHMISTKE + S1MTCHINTRST + S1MTCHEASY. This scale has a reliability of .899, M= 6.19 , SD =.75. Like the Staff Quality dimension, an ideal score was defined to measure the level of equity in Positive Relationships. The ideal positive relationship (IPR) response for each of the variables was the "agree" response on the Likert scale that measured students' beliefs, IPR = 21. To measure equity in the Positive Relationships

subscale, the ideal score (IPR) was subtracted from the Positive Relationships Total score, PRES= PRT-IPR. The Positive Relationship Equity Score (PRES) represents the difference actual positive relationship scores are from the ideal score. The Overall Positive Relation Score (OPRS) was calculated by multiplying the positive relationship score by the positive relationship equity score, OPRS = PRT * PRES.

Positive Relationship Total (PRT)

PRT = S1MTCHVALUES + S1MTCHRESPCT + S1MTCHFAIR + S1MTCHCONF + S1MTCHMISTKE + S1MTCHINTRST + S1MTCHEASY

Ideal Positive Relationship (IPR)

IPR = 3 + 3 + 3 + 3 + 3 + 3 + 3 =21

Positive Relationship Equity Score (PRES)

PRES = PRT – IPR

PRES = PRT – 21

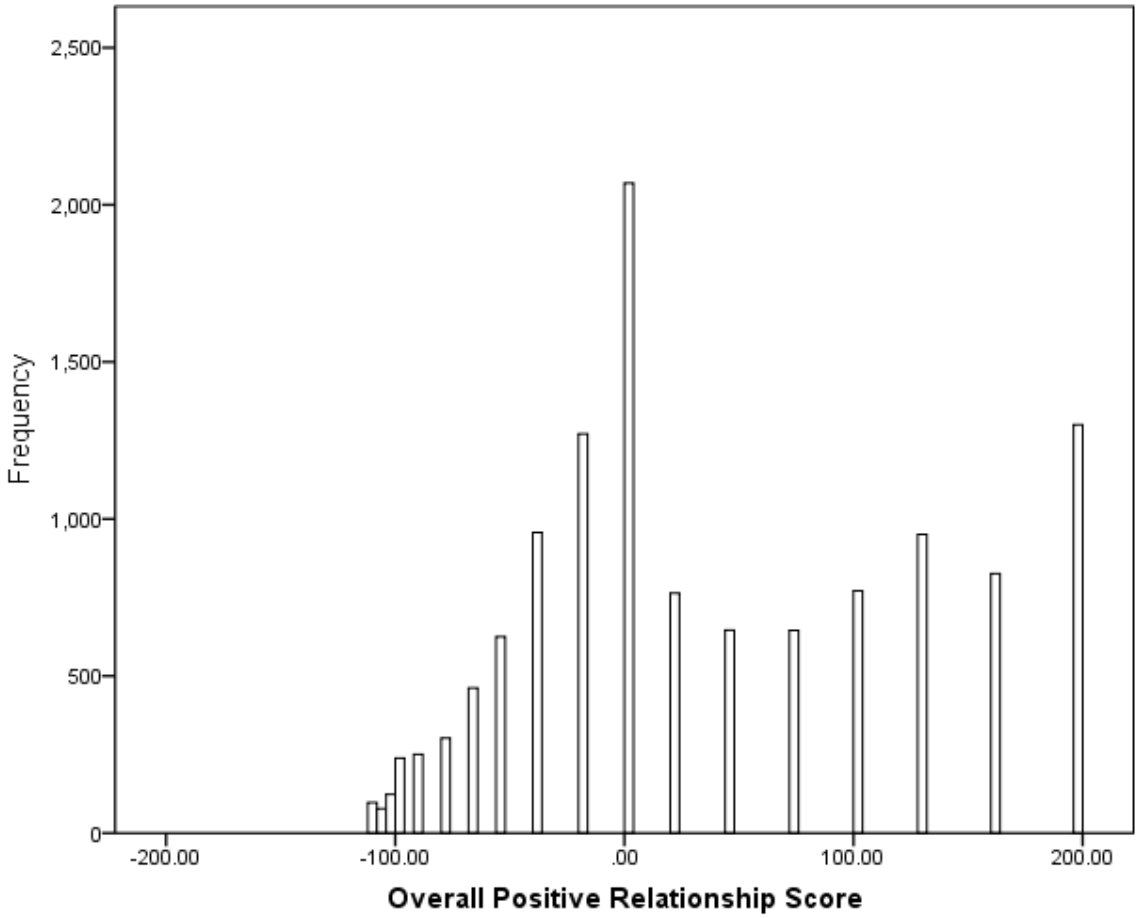
Overall Positive Relationship Score (OPRS)

OPRS = PRT * PRES

The equations above outline how the Overall Positive Relationships Score was calculated. This calculation differs from the percentage approach in the Staff Quality Scale because all variables in the Relationships dimension were measured using the same Likert scale. Figure 4 illustrates the distribution of Overall Positive Relationship Scores. OPRS has a M= 36.62, and SD= 89.62. OPRS that were equal to or more than 0 had equity present in the Positive Relationship Subscale, OPRS less than 0 did not have equity

present in the Positive Relationship Subscale, which was measured categorically (PRESCAT). Of 1,103 African American students in the data set, 696 African American students had equitable experiences in positive relationships with teachers. Of 12,377 of all students in the data set, 7,972 students had equitable experiences in positive relationships with teachers.

Figure 4
Distribution of Overall Positive Relationship Scores



Biased Relationships is the second component extracted from the principal components analysis for the Relationships dimension. Several equations were used to compute the Overall Biased Relationship Score (OBRS). The biased relationship total

(BRT) was the sum of S1MTCHTREAT and S1MTCHMFDIFF, BRT = S1MTCHTREAT + S1MTCHMFDIFF. This scale has a reliability of .722. Like the other dimension calculations, the extent of equity in the biased relationship score was measured using an ideal score. The ideal score for biased relationships (IBR) is the "disagree" response on the Likert scale that measured students' perceived relationships with their teachers, IBR= 6. To measure equity in the Biased Relationships subscale, the ideal score (IBR) was subtracted from the Biased Relationships Total score, BRES= BRT-IBR. The Biased Relationship Equity Score (BRES) represents the difference between the actual biased relationship scores from the ideal score. The Overall Biased Relationship Score (OBRS) was calculated by multiplying the Biased Relationship Total by the Biased Relationship Equity Score, OBRS = BRT * BRES.

Bias Relationship Total (BRT)
BRT = S1MTCHTREAT + S1MTCHMFDIFF
Ideal Biases Relationship (IBR)
IBR = 3 + 3 = 6
Bias Relationship Equity Score (BRES)
BRES = BRT – IB
BRES = BRT – 6
Overall Bias Relationship Score (OBRS)
OBRS = BRT * BRES

The equations above outline how the Overall Biased Relationships Score was calculated. Table 23 illustrates the distribution of Overall Biased Relationship Scores. The higher the OBRS the less perceived bias in relationships with teachers. OBRS ranges from -5 to 16, has a M=5.23, and SD=7.84. OBRS that were equal to or more than 0 had equity present in the Biased Relationship Subscale, which indicated that students did not experience teachers that they perceived as biased. OBRS less than 0 did not have equity

present in the Biased Relationship Subscale, which meant that students did experience perceived bias with teachers. The presence and absence of equity in biased relationships was measured categorically in variables, BRESCAT. Of 11,364 students, 9,783 students experience equity in positive relationships with teachers, and 1,581 students did not have equitable experiences in biased relationships with teachers.

Table 23
Distribution of Overall Biased Relationship Scores

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-5.00	1581	11.3	13.9	13.9
	.00	4616	32.8	40.6	54.5
	7.00	1694	12.1	14.9	69.4
	16.00	3473	24.7	30.6	100.0
	Total	11364	80.9	100.0	
Missing	-9.00	211	1.5		
	-8.00	2477	17.6		
	Total	2688	19.1		
Total		14052	100.0		

4.2.3 Staff Perceptions

One well documented barrier that impedes on the educational experiences of students of color, are staff's perceptions and expectations of students and their families. All variables included in the Staff Perceptions dimension were collected from the HSLS teacher survey, only math teachers' responses were included in analyses. Staff Perceptions variables included X1TMEFF, X1TMEXP, X1TMRESP, X1COUPERTEA, X1COUPERCOU, X1COUPERPRI, M1FAMILY, M1DISCIPLINE, M1STUACHIEVE, M1PARENT, and M1HOMEFX. Table 24 provides the definitions for each variable.

Table 24
Staff Perceptions Dimension Variables

Variable Name	Variable Label
Teaching	
X1TMEFF	X1 Scale of math teacher's self-efficacy
X1TMEXP	X1 Scale of math teacher's perceptions of math teachers' expectations
X1TMRESP	X1 Scale of math teacher's perceptions of collective responsibility
X1COUPERTEA	X1 Scale of counselor's perceptions of teacher expectations
X1COUPERCOU	X1 Scale of counselor's perceptions of counselor expectations
X1COUPERPRI	X1 Scale of counselor's perceptions of principal's expectations
Deficit Beliefs	
M1FAMILY	M1 D04A Amount a student can learn is primarily related to family background
M1DISCIPLINE	M1 D04B Students not disciplined at home not likely to accept school discipline
M1STUACHIEVE	M1 D04C Teachers are limited b/c home environment influences student achievement
M1PARENT	M1 D04D If parents would do more for children teacher could do more for students
M1HOMEFX	M1 D04H Cannot do much b/c student motivation/performance depends on home

The first six variables were composite variables constructed from other items in the teacher survey. All items in the teacher survey were measured on the same Likert scale. Responses were reverse coded so that 1= Strongly Disagree, 2= Disagree, 3=Agree, and 4= Strongly Agree. A principal components analysis was conducted to measure staff perceptions. In the initial principal components analysis, X1TMEFF, X1TMEXP, X1TMRESP, X1COUPERTEA, X1COUPERCOU, X1COUPERPRI were all dropped from the Staff Perceptions dimension. A second principal components analysis was constructed with five variables, M1FAMILY, M1DISCIPLINE, M1STUACHIEVE, M1PARENT, and M1HOMEFX; only one component was extracted so the variables were not rotated.

The Kaiser-Meyer Olkin measure of sampling adequacy indicates the dimension is factorable (KMO=.806) exceeding the .6 threshold. The Bartlett's test of sphericity, which measures variable redundancy, was significant at ($x^2(10) = 9{,}872.63, p < .001$). The KMO and Barlett's test are both indicators that test the fitness of variable groups, both measures indicate that the five variables in the Staff Perceptions dimension can be grouped together. The extracted component accounted for 50.6% of variance explained between variables. The variables that remained in the Staff Perceptions dimension describe math teachers' deficit orientation, or how much math teachers perceived home life and student's families as reasons for students' success and discipline. As such, this dimension was renamed Deficit Orientation. The Deficit Orientation scale has a reliability of .751, M= -19.73, SD= 28.01.

To compute scores for teachers' deficit orientation, scores on all five variables were summed to calculate the deficit orientation total (DOT), DOT = M1FAMILY + M1DISCIPLINE + M1STUACHIEVE + M1PARENT + M1HOMEFX. The ideal response for each of the variables in the Deficit Orientation scale was the "disagree" response on the Likert scale that measured students' beliefs, IDT = 15. The equity score for Deficit Orientation (DOES) was calculated by subtracting the ideal deficit orientation score (IDT) from the total score of all variables in the Deficit Orientation scale (DOT), DOES = DOT – 15. To measure math teacher's deficit orientation and the extent to which that orientation is equity, the Overall Deficit Orientation Score (ODOS) was calculated by multiplying the deficit orientation total (DOT) by the equity score (DOES), ODOS = DOT * DOES. The equations below were used to measure equity for math teacher's Deficit Orientation. Figure 5 illustrates the distribution of overall deficit orientation scores.

Deficit Orientation (DOT)

DOT = M1FAMILY + M1DISCIPLINE + M1STUACHIEVE +

M1PARENT + M1HOMEFX

Ideal Deficit Orientation (IDO)

IDO = 3 + 3 + 3 + 3 + 3 = 15

Deficit Orientation Equity Score (DOES)

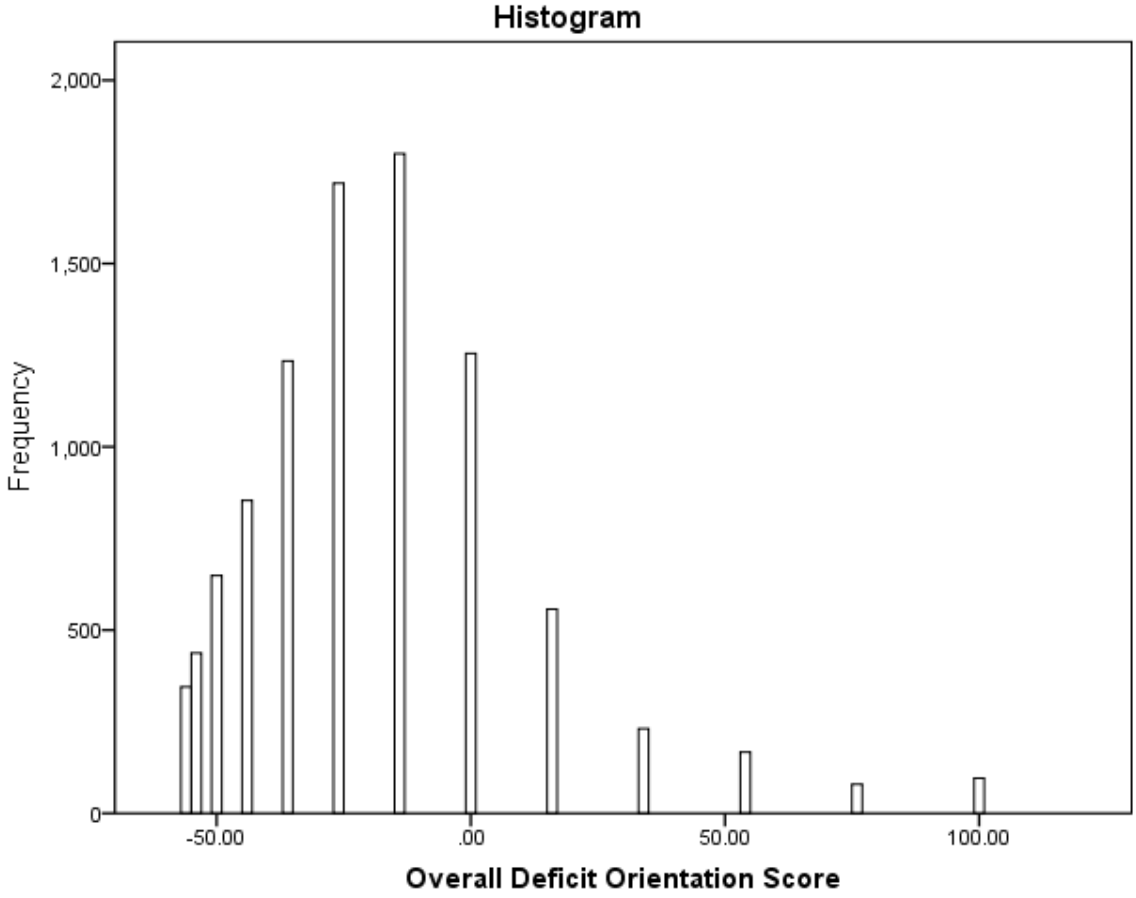
DOES = DOT – IDO

DOES = DOT – 15

Overall Deficit Orientation Score (ODOS)

ODOS = DOT * DOES

Figure 5
Distribution of Overall Deficit Orientation Scores



4.2.4 School Offerings

The school offerings dimension of equity is related to literature about the opportunity to learn that schools provide. Schools that implement programs that address students' needs and contributes to the progression of their educational experiences are more equitable than schools that do not provide students with the opportunity to access resources to better their educational experiences. In this research, the school offering dimension describes opportunities that schools offer to students. Five variables (PLAN, NUMAP, C1CREDREC, C1OUTSIDE, C1DROPOUT) were selected to makeup the

School Offerings dimension. It is important to note that although these variables describe school characteristics, the public HSLS data set does not allow students to be disaggregated by school. Therefore, school offerings should be interpreted as students' experiences with programs and non-human resources offered by schools. The variables included in the School Offerings dimension were collected from the counselor survey in the HSLS data set. Table 25 describes each of the School Offerings variables.

Table 25
School Offerings Dimension

Variable Name	**Variable Label**
PLAN	Career and/or Education Plan is Required
C1CREDREC	C1 B19D Off-track/day/evening/summer school credit recovery program is available
C1OUTSIDE	C1 B19F Support outside the school day for students needing extra help
C1DROPOUT	C1 B24 School has a formal dropout prevention program for high school students
NUMAP	Number of AP classes offered at school

The School Offerings dimension was constructed in the same way that the Staff Quality dimension was constructed because each variable consisted of different response scales. First each variable was assigned an ideal score; the ideal score is a representation of what one would expect to find at an equitable school. For example, the variable PLAN measures whether the student attends a school that requires a career and/or education plan. Conceptually an equitable school would require students to have an education or career plan. Ideal scores were conceptualized as obtaining 100% equity and assigned a score of 1.0.

Table 26
Student's School Requires an education and/or Career Plan

PLAN: School requires an education and/or career plan	
Code	**Response**
.50	Does not require an education or career plan
1.00	Requires an education or career plan

Table 27
Number of AP Classes Offered at Student's School

NUMAP: The number of AP Class Offered at Current School	
Code	**Response**
.50	1-5 AP Classes Offered
.75	6-10 AP Classes Offered
1.00	11-15 AP Classes Offered
1.25	16+ AP Classes Offered

Table 28
Student's School Offers a Credit Recovery Program

C1CREDREC: School offers a credit recovery program	
Code	**Response**
.50	No
1.00	Yes

Table 29
Student's School Offers Outside Help

C1OUTSIDE: School offers outside help	
Code	**Response**
.50	No
1.00	Yes

Table 30
Student's School Offers a Dropout Prevention Program

C1DROPOUT: School offers a dropout prevention program	
Code	**Response**
.50	No
1.00	Yes

Percentage of equity scores were calculated by dividing 100% by the number of possible responses. For example, there were two possible responses to whether a student's school offered an education and/or career plan, yes and no. If a student's school did not

require an education and/or career plan, then the variable was recoded as .50, representing that that variable achieved 50% of equity. If a student's school did require an education and/or career plan, then the variable was recoded as 1.00, representing that the variable achieved 100% of equity. Tables 26 through 30 illustrate the equity scores used in the School Offerings dimension. The total of all School Offerings variables was used to calculate the Overall School Offerings Score (OSOS), OSOS = PLAN + NUMAP + C1CREDREC + C1OUTSIDE + C1DROPOUT, M= 4.26, SD= .62. The larger the OSOS, the more equity present in the School Offering dimension. Figure 6 illustrates the distribution of Overall School Offerings Scores. The following equations were used to construct Overall School Offering Scores,

Overall School Offerings Score

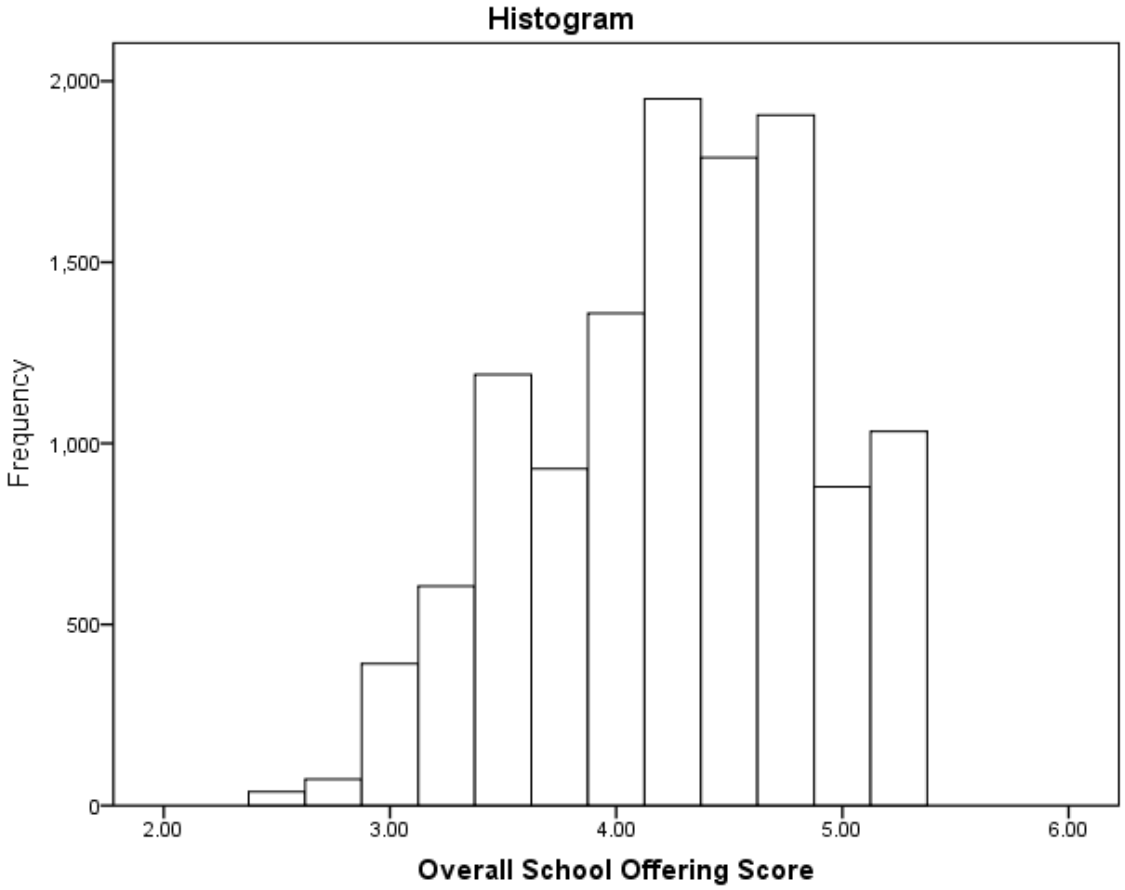
OSOS = PLAN + NUMAP + C1CREDREC + C1OUTSIDE + C1DROPOUT

School Offerings Equity

SOES = 1.00 + 1.00 + 1.00 + 1.00 +1.00 = 5.00

Students who attended schools with a score of five or more were categorized as equity present in the School Offerings dimension. Students who attended schools with a score less than five were categorized as equity not present in the School Offerings dimension. This categorical representation of equity was constructed into variable OSOSCAT. Out of 12,147 students, 1,913 students attended schools with equitable school offerings. Of 1,049 African American students, 209 attended schools with equitable school offerings.

Figure 6
Distribution of Overall School Offerings Scores



Overall, these four dimensions of equity were operationalized using the existing data in the HSLS dataset as a way of providing information about the extent of equity in students' experiences. The following research questions explore how the extent of equity in student experiences explains variance in student outcomes (math achievement, math identity, math efficacy, math utility, and math interest). The use of ideal scores position equity as a standard as opposed to a distance to or from other students' dimension scores. In this way, ideal scores compare students' actual experiences to the experiences that they ideally would get at an equitable school, instead of comparing scores between groups of

students. Constructing equity as a percentage score for Staff Quality and School Offerings controls for the differences in the scale of responses to each item included on respective dimensions.

The subscales in the Relationship dimension (Positive Relationships and Biased Relationships) and Staff Perspectives are measured by multiplying total scale scores by their equity scores. This method was more effective than using equity percentages due to an inability to match Likert responses to equity percentages. For example, in the Staff Quality scale, a teacher may be alternatively certified, which represents 50% of equity, a statement that makes theoretical sense because a teacher may have other experiences that contribute to their quality. However, the S1MTCHVALUES variable located in the Positive Relationships subscale measures the extent to which math teachers values or listens to students' ideas. If a student strongly disagrees or disagrees with this statement, it does not make theoretical sense to define either of those responses as a partial representation of equity.

4.3 RESEARCH QUESTION: WHAT IS THE RELATIONSHIP BETWEEN STUDENT OUTCOMES AND EQUITY IN SCHOOLS?

To investigate the relationship between equity in schools and student outcomes, multiple regression was used to analyze the relationship between the four dimensions of equity (staff quality, relationships, staff perceptions, and school offerings) and each of the five student outcomes (math achievement, math identity, math efficacy, math interest, and math utility). The dependent variables measured during the follow up data collection period in 2012 (X2TXMTSCOR, X2MTHID, X2MTHEFF, X2MTHUTI, X2MTHINT) were calculated and provided by the researchers responsible for constructing the HSLS

data set. Researchers used principal components analysis to construct the outcome variables included in this dissertation. The same variables collected during the base year in 2009 (X1TXMTSCOR, X1MTHID, X1MTHEFF, X1MTHUTI, X1MTHINT) were used as predictor variables. Table 31 illustrates the meanings of the dependent variables.

Table 31
Student Outcome Variables

Variable Name	**Variable Label**
X2TXMTSCOR	X2 Mathematics standardized theta score
X2MTHID	X2 Scale of student's mathematics identity
X2MTHEFF	X2 Scale of student's mathematics self-efficacy
X2MTHINT	X2 Scale of student's interest in fall 2009 math course
X2MTHUTI	X2 Scale of student's mathematics utility
X2TXMTH	X2 Mathematics theta score
X2TXMQUINT	X2 Mathematics quintile score

Each regression included student characteristics, race, socioeconomic status, sex, school location, school control, and the outcome variables' 2009 scores, as predictor variables. The following sub-questions guided regression analyses,

1. What is the relationship between math achievement and the equity in staff quality, relationships, staff perceptions, and school offerings?
2. What is the relationship between math identity and the equity in staff quality, relationships, staff perceptions, and school offerings?
3. What is the relationship between math efficacy and the equity in staff quality, relationships, staff perceptions, and school offerings?
4. What is the relationship between math utility and the equity in staff quality, relationships, staff perceptions, and school offerings?

5. What is the relationship between math interest and the equity in staff quality, relationships, staff perceptions, and school offerings?

All regressions were analyzed after imputing values for large amounts of missing data in the HSLS data set. The multiple regressions utilized a stepwise regression which uses a combination of forward and backward selection methods to compute a regression model with predictors that best explain the variance in the outcome variable. Predictor variables and outcome variables were tested for linearity, normality, multicollinearity, and homoscedasticity. While Kolmogorov-Smirnov (KS) scores suggested that the variables were not normal, histograms, q-q plots, and p-p plots indicated that residuals are normal and linear. Research suggests that KS scores will be significant with large data sets and that histograms and plots are better measures of normality (Ghasemi & Zahediasl, 2012). Multicollinearity was assessed using VIF and tolerance scores, which indicated that there was no multicollinearity in the regression models.

A total of five regressions were analyzed for each student outcome. Overall, the individual multiple regressions for all five student outcomes were statistically significant, likely due to the large sample size. However, predicator variables related to the equity dimensions shared a very small (<.1) correlations with outcome variables. Tables 32, 34, 36, 38, and 40 present the coefficients of each multiple regression model that explain the most variance for each student outcome for African American students. Reported R^2 values indicate the addition of equity dimension scores only explained 1-2% of variance explained in all five models. These results indicate that equity as measured by the four dimensions in the HSLS data set do not meaningfully predict student outcomes. Pretest scores were the greatest predictor of student outcome variables, and student characteristics

predicted an additional 5-15% of variance in outcome variables. The dimensions of equity were the weakest predictors in the regression model for all five student outcomes compared to pretest scores and student characteristics.

Table 32

Math Achievement Scores Relationship to Equity Dimensions

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	12.920	.543		23.786	.000
X1 Mathematics standardized theta score	.693	.004	.692	162.905	.000
Socioeconomic Status	1.378	.065	.087	21.101	.000
X1 School control	1.095	.112	.042	9.753	.000
X1 Individualized Education Plan	-1.269	.105	-.047	-12.115	.000
Overall Positive Relationship Score	.004	.000	.038	9.009	.000
X1 Student's sex	-.349	.075	-.017	-4.652	.000
Overall Staff Quality Score using percentages	.220	.053	.015	4.186	.000
Overall Bias Score	-.015	.004	-.015	-3.517	.000
African American	-.434	.145	-.011	-3.001	.003
Overall School Offering Score	-.226	.062	-.014	-3.642	.000
X1 School locale (urbanicity)	-.120	.036	-.013	-3.339	.001
Overall Deficit Orientation Score	.003	.001	.008	2.174	.030

Table 33

Model Summary for Student's Math Achievement

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.754[a]	.569	.569	6.6315
2	.760[b]	.577	.577	6.5658
3	.761[c]	.580	.580	6.5462
4	.762[d]	.581	.581	6.5329
5	.763[e]	.582	.582	6.5258
6	.763[f]	.583	.583	6.5234
7	.763[g]	.583	.583	6.5214
8	.764[h]	.583	.583	6.5203
9	.764[i]	.583	.583	6.5194
10	.764[j]	.583	.583	6.5185
11	.764[k]	.583	.583	6.5174
12	.764[l]	.584	.583	6.5170

Each model added a predictor in table 3 sequentially. Table 3 represents model 12.

Table 34

Math Identity Scores Relationship to Equity Dimensions

	Unstandardized Coefficients		Standardized Coefficients		Sig
Model	B	Std. Error	Beta	t	.
(Constant)	-.420	.049		-8.604	.000
X1 Scale of student's mathematics identity	.586	.005	.565	121.505	.000
Socioeconomic Status organized by low	.083	.008	.051	10.549	.000
X1 Student's sex	-.111	.010	-.054	-11.593	.000
X1 School control	.143	.013	.053	11.050	.000
Overall Staff Quality Score using percentages	.044	.007	.030	6.583	.000
X1 Individualized Education Plan	-.040	.013	-.015	-3.090	.002
African American	-.038	.018	-.010	-2.100	.036

Table 35

Model Summary for Student's Math Identity

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.577[a]	.333	.333	.83950
2	.581[b]	.337	.337	.83658
3	.583[c]	.340	.340	.83501
4	.585[d]	.342	.342	.83344
5	.586[e]	.343	.343	.83288
6	.586[f]	.343	.343	.83275
7	.586[g]	.343	.343	.83271

Each model added a predictor from table 5 sequentially. Table 5 represents model 7.

Table 36

Math Efficacy Relationships to Equity Dimensions

	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.
(Constant)	.004	.032		.131	.896
X1 Scale of student's mathematics self-efficacy	.357	.006	.347	61.063	.000
X1 Student's sex	-.179	.010	-.090	-17.043	.000
X1 School control	.126	.015	.049	8.607	.000
Socioeconomic Status	.085	.009	.054	9.892	.000
African American	.106	.020	.028	5.265	.000
Overall Positive Relationship Score	.000	.000	.017	2.937	.003
X1 School locale (urbanicity)	-.013	.005	-.014	-2.635	.008
Overall Deficit Orientation Score	.001	.000	.014	2.579	.010

Table 37

Model Summary for Student's Math Self Efficacy

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.370[a]	.137	.137	.92484
2	.380[b]	.144	.144	.92093
3	.386[c]	.149	.149	.91842
4	.389[d]	.152	.151	.91705
5	.390[e]	.152	.152	.91665
6	.391[f]	.153	.152	.91654
7	.391[g]	.153	.153	.91644
8	.391[h]	.153	.153	.91636

Each model added a predictor from table 7 sequentially. Table 7 represents coefficients for model 8.

Table 38

Math Utility Relationship to Equity Dimensions

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	-.278	.077		-3.629	.000
X1 Scale of student's mathematics utility	.292	.006	.284	49.912	.000
Overall Positive Relationship Score	.001	.000	.049	7.668	.000
X1 Student's sex	-.088	.011	-.043	-8.003	.000
X1 School control	.095	.016	.036	5.765	.000
X1 School locale (urbanicity)	.027	.005	.029	5.013	.000
Socioeconomic Status	.051	.009	.032	5.657	.000
African American	.122	.021	.031	5.763	.000
Overall Staff Quality Score using percentages	.033	.008	.023	4.295	.000
Overall School Offering Score	-.030	.009	-.019	-3.339	.001
Overall Bias Score	.002	.001	.019	3.146	.002
Overall Deficit Orientation Score	.000	.000	-.012	-2.169	.030

Table 39

Model Summary for Student's Math Utility

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.304[a]	.092	.092	.96362
2	.310[b]	.096	.096	.96173
3	.312[c]	.098	.098	.96080
4	.315[d]	.099	.099	.95992
5	.317[e]	.100	.100	.95941
6	.318[f]	.101	.101	.95893
7	.320[g]	.102	.102	.95844
8	.320[h]	.103	.102	.95819
9	.321[i]	.103	.103	.95803
10	.321[j]	.103	.103	.95789
11	.322[k]	.103	.103	.95783

Each model added a predictor from table 9 sequentially. Table 9 represents coefficients for model 11.

Table 40

Math Interest Relationship with Equity Dimension

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	-.127	.032		-3.962	.000
X1 Scale of student's interest in fall 2009 math course	.387	.006	.365	65.394	.000
X1 School control	.105	.015	.040	6.991	.000
X1 Student's sex	-.054	.011	-.027	-5.053	.000
Socioeconomic Status	.046	.009	.029	5.275	.000
X1 School locale (urbanicity)	-.017	.005	-.018	-3.263	.001
African American	.061	.021	.016	2.956	.003
Overall Bias Score	-.001	.001	-.014	-2.489	.013

Dependent Variable: X2 Scale of student's interest in fall 2009 math course[a]

Table 41

Model Summary for Student's Math Interest

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.364[a]	.133	.133	.94257
2	.368[b]	.135	.135	.94117
3	.369[c]	.136	.136	.94077
4	.370[d]	.137	.137	.94039
5	.370[e]	.137	.137	.94024
6	.371[f]	.137	.137	.94012
7	.371[g]	.138	.137	.94004

Each model added a predictor from table 11 sequentially.
Table 11 represents coefficients for model 7.

A secondary analysis was conducted for each racial group in the data set to ascertain whether certain predictors mattered for different student groups. Five stepwise multiple regressions analyzing predictor variables explained variance in each outcome variable were constructed for each racial group, including American Indian, Pacific Islander, Hispanic, Asian American, and White students. For most regression models, the same predictors were selected to best model the relationship between predictors and student outcomes despite racial groups. Correlations between predictors and outcome variables were still relatively low (<.1) across stepwise regressions by racial group. However, there were some instances where the order of predictors was different for different racial groups, which suggests that all variables may not be of the same importance for each racial group when investigating equity and student outcomes. Overall, the regressions analyzed to address the second research question, indicates that dimensions constructed from the HSLS data set are weak predictors of student outcomes for African Americans and students from all racial groups. For all regression analyses,

pretest scores and student characteristics in the HSLS data set were better predictors of student outcomes than school characteristics.

4.4 RESEARCH QUESTION: DOES ACCESS TO EQUITABLE EDUCATIONAL EXPERIENCES IN SCHOOLS PREDICT RACIAL DISPARITIES?

Contingency tables were constructed to investigate the association between equity dimensions and racial group using the categorical measures of equity for each dimension: staff quality (OSQSCAT), positive relationships (PRESCAT), biased relationships (BESCAT), deficit orientation (DOESCAT), and school offerings (OSOS2CAT). Table 42 presents a contingency table of race and staff quality equity. The proportion of all students who had access to equitable staff quality is 1575/8537= .18. The odds that an African American student attended a school with equitable staff quality were 112/525=.21, the probability that African American students attend a school with equitable staff is 112/637= 18%. African American students make up 7.1% of all students who attend schools with equitable staffing, Latino students make up 11.8% of all students who attend schools with equitable staffing, and White students make up 61.5% of all students who attend schools with equitable staffing. A chi-square test was conducted to examine the relationship between race and staff quality, which resulted in a significant relationship, $X^2(7, N= 8537) = 14.266$, $p<05$.

Table 42

Contingency Table: Race x Equity of Staff Quality

		Categorized Overall Staff Quality Score		
		Equity not Present	Equity Present	Total
Amer. Indian/Alaska Native, non-Hispanic	Count	44[a]	10[a]	54
	Expected Count	44.0	10.0	54.0
	% within Race	81.5%	18.5%	100.0%
	% within Staff Quality	0.6%	0.6%	0.6%
	Residual	.0	.0	
Asian, non-Hispanic	Count	634[a]	153[a]	787
	Expected Count	641.8	145.2	787.0
	% within Race	80.6%	19.4%	100.0%
	% within Staff Quality	9.1%	9.7%	9.2%
	Residual	-7.8	7.8	
Black/African-American, non-Hispanic	Count	525[a]	112[a]	637
	Expected Count	519.5	117.5	637.0
	% within Race	82.4%	17.6%	100.0%
	% within Staff Quality	7.5%	7.1%	7.5%
	Residual	5.5	-5.5	
Hispanic, no race specified	Count	93[a]	12[a]	105
	Expected Count	85.6	19.4	105.0
	% within Race	88.6%	11.4%	100.0%
	% within Staff Quality	1.3%	0.8%	1.2%
	Residual	7.4	-7.4	
Hispanic, race specified	Count	984[a]	186[b]	1170
	Expected Count	954.1	215.9	1170.0
	% within Race	84.1%	15.9%	100.0%
	% within Staff Quality	14.1%	11.8%	13.7%
	Residual	29.9	-29.9	

Table 42 (cont.)

More than one race, non-Hispanic	Count	613_a	129_a	742
	Expected Count	605.1	136.9	742.0
	% within X1 Race	82.6%	17.4%	100.0%
	% within Staff Quality	8.8%	8.2%	8.7%
	Residual	7.9	-7.9	
Native Hawaiian/Pacific Islander, non-Hispanic	Count	34_a	4_a	38
	Expected Count	31.0	7.0	38.0
	% within Race	89.5%	10.5%	100.0%
	% within Staff Quality	0.5%	0.3%	0.4%
	Residual	3.0	-3.0	
White, non-Hispanic	Count	4035_a	969_b	5004
	Expected Count	4080.8	923.2	5004.0
	% within Race	80.6%	19.4%	100.0%
	% within Staff Quality	58.0%	61.5%	58.6%
	Residual	-45.8	45.8	
Total	Count	6962	1575	8537
	Expected Count	6962.0	1575.0	8537.0
	% within Race	81.6%	18.4%	100.0%
	% within Staff Quality	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Categorized Overall Staff Quality Score categories whose column proportions do not differ significantly from each other at the .05 level.

Table 43

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	14.266^a	7	.047
Likelihood Ratio	15.089	7	.035
Linear-by-Linear Association	2.326	1	.127
N of Valid Cases	8537		

Table 43 (cont.)

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.01.

Table 44

Contingency Table: Race x Equity of Positive Relationships

		Categorized Equity of Positive Relationship		Total
		Equity not present	Equity present	
Amer. Indian/Alaska Native, non-Hispanic	Count	24_a	48_a	72
	Expected Count	25.6	46.4	72.0
	% within Race	33.3%	66.7%	100.0 %
	% within Positive Relationship	0.5%	0.6%	0.6%
	Residual	-1.6	1.6	
Asian, non-Hispanic	Count	367_a	803_b	1170
	Expected Count	416.4	753.6	1170.0
	% within Race	31.4%	68.6%	100.0 %
	% within Positive Relationship	8.3%	10.1%	9.5%
	Residual	-49.4	49.4	
Black/African-American, non-Hispanic	Count	317_a	696_b	1013
	Expected Count	360.5	652.5	1013.0
	% within Race	31.3%	68.7%	100.0 %
	% within Positive Relationship	7.2%	8.7%	8.2%
	Residual	-43.5	43.5	

Table 44 (cont.)

Hispanic, no race specified	Count	31_a	62_a	93
	Expected Count	33.1	59.9	93.0
	% within Race	33.3%	66.7%	100.0 %
	% within Positive Relationship	0.7%	0.8%	0.8%
	Residual	-2.1	2.1	
Hispanic, race specified	Count	650_a	1139_a	1789
	Expected Count	636.7	1152.3	1789.0
	% within Race	36.3%	63.7%	100.0 %
	% within Positive Relationship	14.8%	14.3%	14.5%
	Residual	13.3	-13.3	
More than one race, non-Hispanic	Count	404_a	686_a	1090
	Expected Count	387.9	702.1	1090.0
	% within Race	37.1%	62.9%	100.0 %
	% within Positive Relationship	9.2%	8.6%	8.8%
	Residual	16.1	-16.1	
Native Hawaiian/Pacific Islander, non-Hispanic	Count	18_a	40_a	58
	Expected Count	20.6	37.4	58.0
	% within Race	31.0%	69.0%	100.0 %
	% within Positive Relationship	0.4%	0.5%	0.5%
	Residual	-2.6	2.6	
White, non-Hispanic	Count	2594_a	4498_b	7092
	Expected Count	2524.1	4567.9	7092.0
	% within Race	36.6%	63.4%	100.0 %
	% within Positive Relationship	58.9%	56.4%	57.3%
	Residual	69.9	-69.9	

Table 44 (cont.)

Total	Count	4405	7972	12377
	Expected Count	4405.0	7972.0	12377.0
	% within Race	35.6%	64.4%	100.0%
	% within Positive Relationship	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Categorized equity of Positive Relationship categories whose column proportions do not differ significantly from each other at the .05 level.

Table 45

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	22.625[a]	7	.002
Likelihood Ratio	22.961	7	.002
Linear-by-Linear Association	16.003	1	.000
N of Valid Cases	12377		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 20.64.

Table 44 presents a contingency table of race and equity of positive relationships. The proportion of African American students who had access to equitable staff quality is 7972/12377= .64. The odds that an African American student attended a school with equitable positive relationships were 696/317=2.2, the probability that African American students attend a school with equitable positive relationships was 696/1013= 69%. African American students make up 8.7% of all students who attend schools with equitable experiences in regard to positive relationships with math teachers, Latino students make up 14.3% of all students who attend schools with equitable experiences in

regard to positive relationships with math teachers, and White students make up 54.4% of all students who attend schools with equitable experiences in regard to positive relationships with math teachers. A chi-square test was conducted to examine the relationship between race and positive relationships which resulted in a significant relationship, $X^2(7, N= 12377) = 22.625$, $p<.01$. Across all racial groups, the majority of students attended schools with equitable positive relationships.

Table 46

Contingency Table: Race x Equity of Biased Relationships

		Categorized equity of Bias score		Total
		Equity not present	Equity present	
Amer. Indian/Alaska Native, non-Hispanic	Count	21_a	52_a	73
	Expected Count	16.3	56.7	73.0
	% within Race	28.8%	71.2%	100.0%
	% within Bias score	0.7%	0.5%	0.6%
	Residual	4.7	-4.7	
Asian, non-Hispanic	Count	254_a	931_a	1185
	Expected Count	264.6	920.4	1185.0
	% within Race	21.4%	78.6%	100.0%
	% within Bias score	9.0%	9.5%	9.4%
	Residual	-10.6	10.6	
Black/African-American, non-Hispanic	Count	219_a	831_a	1050
	Expected Count	234.4	815.6	1050.0
	% within Race	20.9%	79.1%	100.0%
	% within Bias score	7.8%	8.5%	8.3%
	Residual	-15.4	15.4	
Hispanic, no race specified	Count	20_a	77_a	97
	Expected Count	21.7	75.3	97.0
	% within Race	20.6%	79.4%	100.0%
	% within Bias score	0.7%	0.8%	0.8%
	Residual	-1.7	1.7	

Table 46 (cont.)

Hispanic, race specified	Count	396_a	1427_a	1823
	Expected Count	407.0	1416.0	1823.0
	% within Race	21.7%	78.3%	100.0%
	% within Bias score	14.1%	14.6%	14.5%
	Residual	-11.0	11.0	
More than one race, non-Hispanic	Count	267_a	833_a	1100
	Expected Count	245.6	854.4	1100.0
	% within Race	24.3%	75.7%	100.0%
	% within Bias score	9.5%	8.5%	8.7%
	Residual	21.4	-21.4	
Native Hawaiian/Pacific Islander, non-Hispanic	Count	13_a	48_a	61
	Expected Count	13.6	47.4	61.0
	% within Race	21.3%	78.7%	100.0%
	% within Bias score	0.5%	0.5%	0.5%
	Residual	-.6	.6	
White, non-Hispanic	Count	1622_a	5584_a	7206
	Expected Count	1608.8	5597.2	7206.0
	% within Race	22.5%	77.5%	100.0%
	% within Bias score	57.7%	57.1%	57.2%
	Residual	13.2	-13.2	
Total	Count	2812	9783	12595
	Expected Count	2812.0	9783.0	12595.0
	% within Race	22.3%	77.7%	100.0%
	% within Bias score	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Categorized equity of Bias score categories whose column proportions do not differ significantly from each other at the .05 level.

Table 47
Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.721[a]	7	.458
Likelihood Ratio	6.603	7	.471
Linear-by-Linear Association	1.062	1	.303
N of Valid Cases	12595		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 13.62.

Table 46 presents a contingency table of race and equity of biased relationships. Equity of biased relationships means that students has an equal chance of avoiding biased staff. The proportion of all students who had access to equitable biased relationships was 9783/12595= .78. The odds that an African American student attended a school with equitable biased relationships were 831/219= 3.79, the probability that African American students attended a school with equitable biased relationships was 831/1050= 79%. A chi-square test was conducted to examine the relationship between race and equity of biased relationships which did not result in a significant relationship, X^2(7, N= 12595) = 6.721, p<.458.

Table 48

Contingency Table: Race x Equity of Deficit Orientation

		Categorized equity of deficit orientation		Total
		Equity not present	Equity present	
Amer. Indian/Alaska Native, non-Hispanic	Count	36_a	14_a	50
	Expected Count	37.4	12.6	50.0
	% within Race	72.0%	28.0%	100.0%
	% within Deficit Orientation	0.5%	0.6%	0.6%
	Residual	-1.4	1.4	
Asian, non-Hispanic	Count	587_a	251_b	838
	Expected Count	626.2	211.8	838.0
	% within Race	70.0%	30.0%	100.0%
	% within Deficit Orientation	8.7%	10.9%	9.2%
	Residual	-39.2	39.2	
Black/African-American, non-Hispanic	Count	573_a	176_a	749
	Expected Count	559.7	189.3	749.0
	% within Race	76.5%	23.5%	100.0%
	% within Deficit Orientation	8.5%	7.7%	8.3%
	Residual	13.3	-13.3	
Hispanic, no race specified	Count	96_a	33_a	129
	Expected Count	96.4	32.6	129.0
	% within Race	74.4%	25.6%	100.0%
	% within Deficit Orientation	1.4%	1.4%	1.4%
	Residual	-.4	.4	
Hispanic, race specified	Count	920_a	316_a	1236
	Expected Count	923.6	312.4	1236.0
	% within Race	74.4%	25.6%	100.0%
	% within Deficit Orientation	13.6%	13.8%	13.6%

Table 48 (cont.)

	Residual	-3.6	3.6	
More than one race, non-Hispanic	Count	595_a	207_a	802
	Expected Count	599.3	202.7	802.0
	% within Race	74.2%	25.8%	100.0%
	% within Deficit Orientation	8.8%	9.0%	8.8%
	Residual	-4.3	4.3	
Native Hawaiian/Pacific Islander, non-Hispanic	Count	28_a	9_a	37
	Expected Count	27.6	9.4	37.0
	% within Race	75.7%	24.3%	100.0%
	% within Deficit Orientation	0.4%	0.4%	0.4%
	Residual	.4	-.4	
White, non-Hispanic	Count	3943_a	1287_a	5230
	Expected Count	3907.9	1322.1	5230.0
	% within Race	75.4%	24.6%	100.0%
	% within Deficit Orientation	58.2%	56.1%	57.7%
	Residual	35.1	-35.1	
Total	Count	6778	2293	9071
	Expected Count	6778.0	2293.0	9071.0
	% within Race	74.7%	25.3%	100.0%
	% within Deficit Orientation	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Categorized equity of deficit orientation categories whose column proportions do not differ significantly from each other at the .05 level.

Table 49

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12.588[a]	7	.083
Likelihood Ratio	12.254	7	.093
Linear-by-Linear Association	4.839	1	.028
N of Valid Cases	9071		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.35.

Table 48 presents a contingency table of race and equity of deficit orientation. The proportion of all students who had access to equitable experience in regard to teachers' deficit orientation was 2293/9071= .25. The odds that an African American student attended a school with equitable deficit orientation were 176/573= .31, the probability that African American students attend a school with equitable deficit orientation is 176/749= 23%. A chi-square test was conducted to examine the relationship between race and equity of deficit orientation which did not result in a significant relationship, X^2(7, N= 9071) = 12.588, p =.083.

Table 50

Contingency Table: Race x Equity of School Offerings

		Categorized School Offerings Equity Score		Total
		.00	1.00	
Amer. Indian/Alaska Native, non-Hispanic	Count	56[a]	12[a]	68
	Expected Count	57.4	10.6	68.0
	% within Race	82.4%	17.6%	100.0%
	% within School Offerings Equity Score	0.6%	0.7%	0.6%
	Residual	-1.4	1.4	
Asian, non-Hispanic	Count	881[a]	250[b]	1131
	Expected Count	953.9	177.1	1131.0
	% within Race	77.9%	22.1%	100.0%
	% within Categorized School Offerings Equity Score	9.0%	13.7%	9.7%
	Residual	-72.9	72.9	
Black/African-American, non-Hispanic	Count	840[a]	209[b]	1049
	Expected Count	884.8	164.2	1049.0
	% within Race	80.1%	19.9%	100.0%
	% within Categorized School Offerings Equity Score	8.5%	11.4%	9.0%
	Residual	-44.8	44.8	
Hispanic, no race specified	Count	130[a]	34[a]	164
	Expected Count	138.3	25.7	164.0
	% within Race	79.3%	20.7%	100.0%
	% within Categorized School Offerings Equity Score	1.3%	1.9%	1.4%
	Residual	-8.3	8.3	

Table 50 (cont.)

Hispanic, race specified	Count	1290_a	294_b	1584
	Expected Count	1336.0	248.0	1584.0
	% within Race	81.4%	18.6%	100.0%
	% within Categorized School Offerings Equity Score	13.1%	16.1%	13.6%
	Residual	-46.0	46.0	
More than one race, non-Hispanic	Count	856_a	156_a	1012
	Expected Count	853.6	158.4	1012.0
	% within Race	84.6%	15.4%	100.0%
	% within Categorized School Offerings Equity Score	8.7%	8.5%	8.7%
	Residual	2.4	-2.4	
Native Hawaiian/Pacific Islander, non-Hispanic	Count	37_a	13_b	50
	Expected Count	42.2	7.8	50.0
	% within Race	74.0%	26.0%	100.0%
	% within Categorized School Offerings Equity Score	0.4%	0.7%	0.4%
	Residual	-5.2	5.2	
White, non-Hispanic	Count	5748_a	858_b	6606
	Expected Count	5571.8	1034.2	6606.0
	% within Race	87.0%	13.0%	100.0%
	% within Categorized School Offerings Equity Score	58.4%	47.0%	56.6%
	Residual	176.2	-176.2	
Total	Count	9838	1826	11664
	Expected Count	9838.0	1826.0	11664.0
	% within Race	84.3%	15.7%	100.0%
	% within Categorized School Offerings Equity Score	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Categorized School Offerings Equity Score categories whose column proportions do not differ significantly from each other at the .05 level.

Table 51
Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	103.314[a]	7	.000
Likelihood Ratio	99.628	7	.000
Linear-by-Linear Association	94.358	1	.000
N of Valid Cases	11664		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.83.

Table 50 presents a contingency table of race and equity of school offerings. The proportion of all students who had access to equitable school offerings is 1826/11664= .16. The odds that an African American student attended a school with equitable school offerings were 209/840= .25, the probability that African American students attended a school with equitable school offerings was 209/1049= 20%. A chi-square test was conducted to examine the relationship between race and equity of school offerings which resulted in a significant relationship, X^2(7, N= 11664) = 103.314, p <.001. Overall, staff quality, positive relationships, and school offerings had statistically significant relationships with race.

CHAPTER 5: DISCUSSION

The goal of this research was to understand the relationship between equity and African American student outcomes. Previous research that focused on gaps in education and the disparities in treatment across racial groups mostly documented the damage of educational inequities. At the same time, those studies provide limited information about how to improve African American students' educational experiences that do not rely on the treatment of White students' experiences as the ideal or aspirational experience for other students. At the most basic level, what it means to be White in America is a vastly different experience than what it means to Black in America. Hegemony, ideology, power, capitalization, patriarchy, and colonization are deeply ingrained across American institutions, including education. These structures in society construct different paths that African American students will have to navigate in order to be successful. An essential assumption of this research is that schools either contribute to the maintenance of these structural barriers or contribute to its disruption.

This exploratory research conceptualizes equity to further understand the extent to which schools respond to the educational needs of African American students, while accounting for a context that systematically oppresses African American students and other marginalized students. The conceptualization and measurement of equity within the HSLS was challenging. Findings suggest that student characteristics are more predictive than school characteristics in explaining African American students' experiences within the given publicly available High School Longitudinal Study (HSLS). While the public data set for HSLS included other information such as the length of instructional time these variables were not included as they were thought to be reflective of overall school

characteristics, but of individual teachers. It is troubling that a student's race, SES, or gender is more important than the types or experience of teachers and administrators in schools. One should not conclude that the school characteristics are not important to student success, but rather important data about school characteristics that can explain variance in student outcomes are not being reported or collected.

The question becomes, what characteristics of schools predict equitable educational experiences of African American students? One limitation of this study, was the limited data available. The HSLS restricted data set included more school level variables such as, the racial and socioeconomic composition of the school, the number of hours of instruction, and disciplinary actions. These variables would allow a more critical investigation of equity. It would be interesting to explore whether equity in staff quality, staff perceptions, student perceived relationships, and school offerings were statistically different at predominantly African American schools compared to others, and how these differences impact student outcomes. While these additional measures in the restricted data set potentially provide a deeper understanding of equity in schools, there are still larger questions about appropriately conceptualizing and measuring equity. The equity literature emphasizes the need for a local definition of equity; meaningful inclusion can help schools avoid paternalistic decision making and operating on in appropriate assumptions about students. Simultaneously, local definitions provide a challenge in research that aims to be generalizable or to make comparisons about equity between communities and across geographic locations.

The need to be able to make generalizations or conclusive comparisons, allude to another concern, the appropriateness of well accepted rigorous research methods' abilities

to measure equity. If equity should be local, as opposed to standardized, is the value of findings minimized, could they still be perceived as evidence that should be considered to make school decisions? Could there be a consensus on the definition of equity, if so, who should comprise of the consensus? Should generalizability in regards to research even be a goal? If critical standards of equity could be developed, how could they be prevented from becoming perfunctory? While the use of Critical Race Theory and Critical Quantitative Inquiry provide a framework to define equity within a context of institutional oppression and racism, these academic frameworks may be inaccessible to local conversations about equity. It would be interesting to learn how local communities define equity, and how much of their conversations are based on narratives that researchers have legitimized such as achievement on standardized tests and other inequitable measures compared to definitions based on communities' needs beyond the status quo.

While there are concerns in regard to the conceptualization and measurement of equity, there are also concerns about the associated student outcomes. Another limitation of the HSLS data set is the limited information on student outcomes. This research used math achievement, interest, efficacy, utility, and identity as student outcomes. It would be interesting to explore how much these outcomes, or other variables included in the HSLS data set are important in serving the educational needs of African American students. Do those aforementioned variables, and the way they were been measured, matter significantly for African American students? Despite these concerns, this research begins to explore equity in schools by utilizing variables that describe school characteristics to explain student outcomes. The following sections provide a discussion of the

conceptualization of equity, the measurement of equity, and the meaning of statistical results.

5.1 CONCEPTUALIZING EQUITY

In the literature review, equity was conceptualized as eight essential components: (a) the meaningful inclusion of parents and communities in schools and decision making, (b) diverse and qualified school staff, (c) the utilization of culturally responsive practices, (d) the implementation of critical pedagogy and curriculum, (e) a safe school environment and climate, (f) the acknowledgement of power imbalances, (g) values that prioritize the liberation of students, and (h) adaptability to respond to the evolution of the meanings of race, culture, and racism, patriarchy, and hegemony. These components are an attempt to move from a definition of equity to a conceptualization of how equity would manifest in schools. This conceptualization contributes to the gap in critical literature by constructing a conceptualization that can be empirically measured. Establishing the connections between theories, conceptualizations, and measurements is a complicated process and the nature of how equity is discussed requires that there be consensus amongst those marginalized about what they will accept as definitions, indicators, or measurements of equity.

The conceptualization of equity could be significantly strengthened through the inclusion of groups of African Americans in constructing these definitions. One way this could be achieved is by interviewing African Americans who consider themselves to be liberated or on the path towards liberation to identify essential experiences in schools that contributed to or hindered their liberation. Another way to achieve this, could be to task groups of parents and communities across different schools to construct their expectations

of equity and investigate how those constructions compare across contexts and community histories. It would also be interesting to investigate how school staff's beliefs about equity compare to students, parents, and communities' beliefs, and the impact of these beliefs on the eight components of equity. As the construction of equity solidifies, it may also be interesting to compare the extent to which schools are equitable, and students' success post-secondary school.

While the eight components of an equitable school contributes to a conversation about educational equity, more research is needed make connections between the theory of equity and the measurement of equity. A future direction of research in the measurement of equity are also developed measures of equitable outcomes. If African American students have different needs to be success, indicators for those needs should become important outcome variables for equity. Based on the critical research presented in the literature review, racial identity, cultural mis-orientation, empowerment, critical consciousness, mastery of academic content, and school satisfaction could be important outcome variables.

Unfortunately, the eight components used to conceptualize equity in schools could not be tested using the HSLS public data set. Essential to the equity narrative is a focus on school level variables to explain student outcomes. While the public data set includes very few school level variables, there were some items on the student, teacher, and counselor surveys that could potentially describe school characteristics that account for students equitable experiences. These items were grouped based on their similarities with other items that described school characteristics, which led to the four dimensions of equity. This approach to operationalizing equity does not intend to equate equity to a simple

matter of school inputs and outputs, but rather explores the results of school practices, policies, and culture and their impact on student outcomes. For example, the Staff Quality dimension is not a simple input that describes output. Staff Quality is an indication of school practices, such as recruitment and hiring practices, that ultimately contribute to quality of staff at schools.

While there are no perfect measures in research, there were aspects of these four dimensions that were somewhat problematic. The Staff Quality dimension accounts for the credentials and experiences of staff at schools, but there were no measurements about the quality of the credentials and experiences themselves. Perhaps there are teachers who attended terrible teacher preparation programs and happen to have a lot experience in being bad teachers. It would be interesting to also have information about teachers' preparation programs and an evaluation of how well teacher preparation programs prepared teachers to teach African American students and other marginalized students. The Staff Quality dimension also defined having a bachelor's degree in education as an ideal indicator of equity. It is possible that math teachers may have received their bachelor degrees from math departments. A bachelor's degree in education was defined as ideal based on the assumption that good teachers demonstrate mastery of their content expertise *and* pedagogy. However, research suggests that teacher preparation programs do not adequately prepare new teachers to teach students of color.

Compounding inadequate preparation, may be the use of problematic research in diversity courses intended to enlighten preservice teachers, that instead normalize deficit thinking, savior mentalities, and narratives of African American students who are urban, poor and disadvantaged. These narratives likely do not account for the structural racism

that places African American students as disadvantaged, poor, and displaced to sections in the city. Without knowing the quality of teacher preparation programs in colleges of education or math departments, it is difficult to gauge how degree attainment matters in understanding staff quality. While the HSLS data set provides access to a large amount of information, these dimensions were limited based on the questions that were asked on the surveys. It is certainly possible that it would have been better to construct instruments that directly measured the four dimensions of equity which would have allowed for more control over the types of questions asked and the why questions were asked. The inclusion of equity measurement and indicators in large national data sets could provide a wealth of information about African American students' experiences in education.

5.2 CREATING EQUITY SCORES FOR EQUITY DIMENSIONS

The previous section discussed the conceptualization of equity, this section discusses the extent to which equity dimensions are equitable. All four dimensions utilized ideal scores that represented what one might expect responses to be at an equitable school. The Staff Quality and School Offerings dimension used a percentage approach to measuring equity since each dimension variable was measured differently. The Student Perceived Relationships and Staff Perspectives dimensions compared actual scores to ideal scores. The use of ideal scores to measure the extent of equity in the dimensions required critical judgement to determine what an ideal score should be. In this research, the needs of African American students guided judgements about ideal scores, but they were not always obvious. For example, does the degree to which participants agreed with statements matter in calculating equity, or does it only matter that participants

agree with statements regardless of degree? Are Likert scales the most appropriate response scale for measuring equity?

More research is needed to compare how instrument development can impact the ways that equity is operationalized and measured. Are statistical measures rooted in normalcy and assumptions even appropriate equity, which conceptually is not the normal educational experience in public schools? It would be interesting to research how the extent of equity on dimensions impacts student outcomes. In future research, the use of ideal scores or any kind of standard to measure equity should be validated by impacted marginalized communities. This research did not have the opportunity gauge responses from African Americans included in the data set to determine whether they believed those ideal responses were valid. This cultural validation is important in ensuring that equity is locally defined. Ultimately, the current construction of equity using the public HSLS data set could only provide information about equity in partially critical ways. The future research discussed in this section could provide findings that led to stronger measurements.

5.3 STATISTICAL FINDINGS

The regressions that analyzed whether the four dimensions of equity predicted student outcomes were all significant, but ultimately meaningless. Equity dimensions only accounted for 1-2% of explained variance for all five outcome variables (math achievement, math identity, math efficacy, math utility, and math interest). Meanwhile pretest scores for each outcome variable measured during the base year and student characteristics accounts for much more of the explained variance in student outcomes. As a result, the items on the HSLS survey that could address students' equitable experiences

at school were not good measures to predict student outcomes. Ultimately, when race and ascribed student characteristics better explain student outcomes than the experiences that schools provide, there is a problem with the data that was collection.

The implications of these findings could lead readers to believe that math achievement, efficacy, use of math, and interest in math are all dependent on students' race, gender, SES, and other ascribed characteristics. However, students' race, culture, SES, and gender do not inherently dictate student outcomes. Rather these salient identities interact within the complexities of hegemony, identity, patriarchy, and colonization in ways that unaccounted for in the HSLS data set. This statement assumes that students' achievement and performance in math are not inherently dictated by students' identities, but rather their experiences within the institution of education. The failure to operationalize and measure equity within the limitations of data available in the public HSLS data set suggests more research is needed to better define equity.

It is possible that one reason that addressing the educational needs of African American students is so challenging, is that not only are school reforms and policy uncritical, but the data and evidence used to support them are uncritical as well. Data that does not allow for a construction of equity that explains students' experiences could be contributing to the marginalization of African American students by illuminating only one part of the challenge that African American students face. This persistent focus on student characteristics to explain school quality and student outcomes is not only racist, sexist, classist, and ableist, but it normalizes a narrative that there is "something wrong" with marginalized groups. This type of data does not contribute to a narrative that meaningfully improves educational experiences because the race, cultures, and neighborhoods of

students are not going to change. Researchers, scholars, educators, communities, and politicians can, however, make changes to schools so that they can address the educational needs of students despite who they are. Overall, this research was unsuccessful in operationalizing and measuring equity with the HSLS data set to predict student outcomes.

REFERENCES

Alemán, J. E. (2007). Situating Texas school finance policy in a CRT framework: How "substantially equal" yields racial inequity. *Educational Administration Quarterly, 43*(5), 525-558.

Apple, M. W. (1982). *Education and power*. Boston, MA: Routledge & Kegan Paul.

Apple, M. W. (2004). *Ideology and curriculum*. London: Routledge & Kegan Paul.

Anderson, J. D. (1988). *The education of Blacks in the South, 1860-1935*. Chapel Hill: University of North Carolina Press.

Andrews, K. (2014). Toward a black radical independent education: Black radicalism, independence, and the supplementary school movement. *Journal of Negro Education, 83*(1), 5-14.

Ansalone, G. (2006). Tracking: A return to Jim Crow. *Race, Gender & Class, 13*, 144-153.

Aske, D., Corman, R. R., & Marston, C. (2011). Education policy and school segregation: A study of the Denver metropolitan region. *Journal of Legal, Ethical & Regulatory Issues, 14*, 27-35.

Au, K. & Mason, J. (1981). Social organization factors in learning to read: The balance of rights hypothesis. *Reading Research Quarterly, 17,* 115-52.

Au, W. (2016). Meritocracy 2.0. *Educational Policy, 30*(1), 39-62. doi:10.1177/0895904815614916

Artiles, J.A. & Trent, S.C. (1994). Overrepresentation of minority students in special education: A continuing debate. *The Journal of Special Education, 27*(4). 410437.

Baez, B. (2007). Thinking critically about the "critical": Quantitative research as social critique. *New Directions for Institutional Research, 133*, 17-23.

Barrett, A.M., Chawla-Duggan, R., Lowe, J., Nikel, J., & Ukpo, E. (2006). *The concept of quality in education: A review of the 'international' literature on the concept of quality in education.* Bristol: EdQual. Retrieved from http://www.edqual.org/publications/workingpaper/edqualwp3.pdf/at_download/fil e.pdf

Bell, D. (1992). *Faces at the bottom of the well: The permanence of racism*. New York: Basic Books.

Bell, D. A. (2006). *Silent covenants: Brown v. Board of Education and the unfulfilled hopes for racial reform*. Oxford: Oxford University Press.

Bell, L. A., Castaneda, C., & Zuniga, X. (2010). Racism: Introduction. In M. Adams et al. (Eds.), *Readings for Diversity and Social Justice* (2nd ed.) (pp. 59-66). New York, NY: Routledge.

Bernal, P., Mittag, N., & Qureshi, J. A. (2016). Estimating effects of school quality using multiple proxies. *Labour Economics*, *39,* 1-10. doi:10.1016/j.labeco.2016.01.005

Bergner, G. (2009). Black Children, White Preference: Brown v. Board, the Doll Tests, and the Politics of Self-Esteem. American Quarterly, 61(2), 299-332.

Blanchett, W. J. (2006). Disproportionate representation of African American students in special education: Acknowledging the role of White privilege and racism. *Educational Researcher 35*(6), 24-28.

Bonilla-Silva, E. (1997). Rethinking racism: Toward a structural interpretation. *American Sociological Review*, *62*(3), 465-480.

Bonilla-Silva, E. (2001). *White supremacy and racism in the post-civil rights era*. Boulder: Lynne Rienner Publishers.

Brown v. Board of Education of Topeka, 74 Sup. Ct. 686 (1954).

Burbules, N. (2004). Ways of thinking about educational quality. *Educational Researcher, 33*(6), 4-10. Retrieved from http://www.jstor.org/stable/3699887

Chapman, T. K., & Donnor, J. K. (2015). Critical race theory and the proliferation of U.S. charter schools. *Equity & Excellence In Education*, *48*(1), 137-157.

Charbeneau, J. (2015). White faculty transforming whiteness in the classroom through pedagogical practice. *Race, Ethnicity & Education, 18*(5), 655-674. doi:10.1080/13613324.2013.831823

Chitty, C. (2002). *Understanding schools and schooling*. London: Routledge/Falmer.

Conway, K. M. (2014). Critical quantitative study of immigrant students. *New Directions for Institutional Research, 158*, 51-63. doi:10.1002/ir.20045

Crenshaw K (1989) Demarginalizing the intersection of race and sex: A black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. *University of Chicago Legal Forum,* 14,138–167.

Crenshaw K (1991) Mapping the margins: Intersectionality, identity politics and violence against women of color. *Stanford Law Review*, 43, 1241–1299.

Decuir, J., & Dixson, A. (2004). “So when it comes out, they aren't that surprised that it is there": Using critical race theory as a tool of analysis of race and racism in education. *Educational Researcher, 33*, 26-31.

Delgado, R. (1995). *Critical race theory: The cutting edge*. Philadelphia: Temple University Press.

Delpit, L. D. (2006). Other people's children: Cultural conflict in the classroom. New York: New Press.

Deming, D.J., Hastings, J.S., Kane, T.J., & Staiger, D.O. (2014). School choice, school quality, and postsecondary attainment. *American Economic Review, 104*(3), 991-1013. Doi: 10.1257/aer.104.3.991

Dewey, J. (1916). *Democracy and education: An introduction to the philosophy of education*. New York: Macmillan.

Dossey, B. M., Keegan, L., & Guzzetta, C. E. (2005). *Pocket guide for holistic nursing*. Boston: Jones and Bartlett Publishers.

Downey, D. B., & Pribesh, S. (2004). When race matters: Teachers' evaluations of students' classroom behavior. *Sociology of Education, 77*(4), 267-282.

Du, B. W. E. B. (1997). *Black reconstruction in america: An essay toward a history of the part which black folk played in the attempt to reconstruct democracy in america, 1860-1880*. New York: Free Press.

Du, B. W. E. B. (1935). Does the negro need separate schools. *Journal of Negro Education*, *4*(3), 328-335.

Elfers, A. M., Plecki, M. L., & Knapp, M. S. (2006). Teacher mobility: Looking more closely at “the movers” within a state system. *Peabody Journal of Education, 81*, 94–127.

Ellsworth, E. (1989). Why doesn't this feel empowering? Working through the repressive myths of critical pedagogy." *Harvard Educational Review, 59,* 297–324.

Faircloth, S., Alcantar, C., & Stage, F. (2015). Use of large-scale data sets to study educational pathways of American Indian and Alaska Native students. *New Directions for Institutional Research, 133*, 5-24.

Falk, J., Hampton, G., Hodgkinson, A., Parker, K., & Rorris, A. (1993). *Social equity and the urban environment, report to the Commonwealth Environment Protection Agency*. AGPS: Canberra.

Feagin, J. R. (2001). *Racist America: Roots, current realities, and future reparations*. New York: Routledge.

Fiel, J. E. (2013). Decomposing school resegregation: Social closure, racial imbalance, and racial isolation. *American Sociological Review*, 78, 828-848. Doi:10.1177/0003122413496252

Freire, P. (2000). *Pedagogy of the oppressed*. New York: Continuum.

Frankenberg, E., Siegel- Hawley, G., Wang, J., & Orfield, G. (2012). *Choice without equity*: *Charter school segregation and the need for civil rights standards*. Los Angeles, CA: The Civil Rights Project / Proyecto Derechos Civiles. Retrieved from: http://escholarship.org/uc/item/4r07q8kg

Gagnon, D. J., & Mattingly, M. J. (2015). Rates of beginning teachers: Examining one indicator of school quality in an equity context. *Journal Of Educational Research, 108*(3), 226-235. doi:10.1080/00220671.2013.878300

Gershenson, S., Holt, S. B., & Papageorge, N. W. (2015). *Who believes in me? The effect of student-teacher demographic match on teacher expectations* (Upjohn Institute Working Paper 15-231). Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

Ginsburg, M. B. & Schubert. J. (2001). *Choices: Improving educational quality: Conceptual issues, the ideal IEQ approach, and the IEQI experience*. DC: USAID, Improving Educational Quality Project.

Giroux, H. (1983). Theories of reproduction and resistance in the new sociology of education: A critical analysis. *Harvard Educational Review, 53*(3), 257-293.

Giroux, H. & Penna, A. (1983). Social education in the classroom: The dynamics of the hidden curriculum. In H. Giroux and D. Purple (Eds.) *The Hidden Curriculum and Moral Education,* 100-121. Berkeley, CA: McCutchan Publishing Corporation.

Ghasemi, A., & Zahediasl, S. (2012). Normality Tests for Statistical Analysis: A Guide for Non-Statisticians. *International Journal of Endocrinology and Metabolism*, *10*(2), 486–489. http://doi.org/10.5812/ijem.3505

Goldhaber, D. (1999). School choice: An examination of the empirical evidence on achievement, parental decision making, and equity. *Educational Researcher, 28* (9), 16-25.

Gregory, A., Skiba, R. J., & Noguera, P. A. (2010). The achievement gap and the discipline gap: Two sides of the same coin? *Educational Researcher, 39*(1), 59-68.

Hall, S. (1992). Cultural studies and its theoretical legacies. In L. Grossberg, C. Nelson, and P. A. Treichler (Eds.), *Critical Dialogues in Cultural Studies*, 277-294. New York: Routledge.

Hanushek, E. A., Kain, J. F., & Rivkin, S. G. (2004). Why public schools lose teachers. *Journal of Human Resources, 39*, 326–354.

Harris, C. (1993) Whiteness as Property. *Harvard Law Review 106*(8), 1709-95.

Harvey, L. (2006). Understanding quality. In Purser, L. (Ed.) *EUA Bologna Handbook: Making Bologna work*. Brussels: European University Association.

Hopkins, R. L. (1994). *Narrative schooling: Experiential learning and the transformation of American education*. New York: Teachers College Press.

Howard, T. (2003). Culturally relevant pedagogy: ingredients for critical teacher reflection. *Theory into Practice, 42*(3), 195-202.

Hurn, C.J. (1978). *The limits and possibilities of schooling: An introduction to the sociology of education*. Boston: Allyn and Bacon.

Ingels, S.J., Pratt, D.J., Herget, D.R., Burns, L.J., Dever, J.A., Ottem, R., Rogers, J.E., Jin, Y., & Leinwand, S. (2011). High School Longitudinal Study of 2009 (HSLS:09). *Base-Year Data File Documentation (NCES 2011-328)*. U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Jay, M. (2003). Critical Race Theory, multicultural education, and the hidden curriculum of hegemony. *Multicultural Perspectives, 5*(4), 3-9.

Jennings, J. L., Deming, D., Jencks, C., Lopuch, M., & Schueler, B. E. (2015). Do differences in school quality matter more than we thought? New evidence on educational opportunity in the twenty-first Century. *Sociology of Education*, *88*(1), 56 - 82. doi:10.1177/0038040714562006

Knowles, F. E. (2012). Toward emancipatory education: An application of Habermasian Theory to Native American educational policy. *International Journal of Qualitative Studies In Education (QSE), 25*(7), 885-904.

Lacireno-Paquet, N., Holyoke, T. T., Moser, M., & Henig, J. R. (2002). Creaming versus cropping: Charter school enrollment practices in response to market incentives. *Educational Evaluation and Policy Analysis, 24*(2), 145-58.

Ladson-Billings, G. (1994). *The Dreamkeepers: Successful teaching for African-American students*. San Francisco: Jossey-Bass, 17–18.

Ladson-Billings G. (1995). But that's just good teaching! The case for culturally relevant pedagogy. *Theory Into Practice, 34*(3), 159-65.

Ladson-Billings, G. & Tate, W.F. (1995). Toward a Critical Race Theory of education. *Teachers College Record, 97*(1), 47–68.

Ladson-Billingsons, G. (2006). From the achievement gap to the education debt: Understanding achievement in U.S. schools. *Educational Researcher*, *35*(7), 3-12.

Lawrence, K., & Keleher, T. (2004). *Structural racism.* Retrieved from http://www.intergroupresources.com/rc/Definitions%20of%20Racism.pdf

Leu, E., & Academy for Educational Development. (2005). *Role of teachers, schools, and communities in quality education: A review of the literature*. Place of publication not identified: Academy for Educational Development, Global Education Center.

Linton, C. (2011). *Equity 101: Book 1*. Thousand Oaks, Calif: Corwin Press.

Locke, D. C. & Bailey, D. F. (2014). *Multicultural aspects of counseling and psychotherapy: Increasing multicultural understanding.* Thousand Oaks, CA: SAGE Publications Ltd. doi: 10.4135/9781483319582

Lubienski, C. (2013). Privatising form or function? Equity, outcomes and influence in American charter schools. *Oxford Review of Education, 39*(4), 498-513.

Lundberg, P. J. (2000). State courts and school funding: A fifty state analysis. A*lbany Law Review, 63*(4), 1101.

Marsh, T.E.J. (2016). Critical Pedagogy for Black Youth Resistance. *Black History Bulletin, 79*(1), 14-23.

Matsuda, M. (1991). Voices of America: Accent, antidiscrimination law and jurisprudence for the last reconstruction. *Yale Law Journal, 100,* 1329–1407.

Medina, J., & Riconscente, M. M. (2005). Accounting for quality. *Journal of Education*, *186*(3), 3-10.

Mezirow, J. (1996). Contemporary paradigms of learning. *Adult Education Quarterly, 46*(3), 158-173.

McNeal, L. R. (2016). Managing our blind spot: The role of bias in the school-to-prison pipeline. *Arizona State Law Journal, 48*(2), 285-311.

Noltemeyer, A.L., Mujic, J., & McLoughlin, C.S. (2012). The history of inequality in education. In A.L. Noltemeyer & C.S. McLoughlin (Eds), *Disproportionality in Education and Special Education*. Springfield, IL: Charles C. Thomas Publisher Ltd.

Ogbu, J. (1987). Variability in minority school performance: A problem in search of explanation. *Anthropology & Educational Quarterly, 18*, 312-334.

Ooms, A. (2014). *Beyond averages: School quality in Denver Public Schools*. Donnell-Kay Foundation: Denver.

Perlstein, D. (2002). Minds stayed on freedom: Politics and pedagogy in the AfricanAmerican freedom struggle. *American Educational Research Journal, 39*(2), 249-77.

Persell, C. H. (1977). *Education and inequality: A theoretical and empirical synthesis*. New York: Free Press.

Powell, R. (2000). Overcoming cultural racism: The promise of multicultural education. *Multicultural Perspectives, 2*(3), 8-14. doi:10.1207/S15327892MCP0203_03

Price, H. E. (2016). Assessing U.S. public school quality: The advantages of combining internal "consumer ratings" with external NCLB ratings. *Educational Policy*, *30*(3), 403-433.

Reardon, S. F., Grewal, E., Kalogrides, D., & Greenberg, E. (2012). Brown fades: The end of court-ordered school desegregation and the resegregation of American public schools. *Journal of Policy Analysis & Management, 31*, 876-904. Doi:10.1002/Pam.21649

Rios-Aguilar, C. (2014). The changing context of critical quantitative inquiry. *New Directions for Institutional Research*, *158*, 95-107. doi:10.1002/ir.20048

Rivkin, S. G. (2000). School desegregation, academic attainment, and earnings. *Journal of Human Resources*, *35*(2), 333-346.

Roda, A., & Stuart Wells, A. (2013). School choice policies and racial segregation: Where white parents' good intentions, anxiety, and privilege collide. *American Journal of Education, 119*, 261-293.

Rousseau, C. K. & Dixson, A. D., (2006). *Critical race theory in education: All God's children got a song*. New York: Routledge.

Savas, G. (2014). Understanding Critical Race Theory as a framework in higher educational research. *British Journal Of Sociology Of Education, 35*(4), 506-522.

Seashore Louis, K., Leithwood, K., Wahlstrom, K., & Anderson, S. (2010). Investigating the links to improved student learning. Washington, DC: Wallace Foundation.

Sedlacek, W. E. (2004). *Beyond the big test: Noncognitive assessment in higher education*. San Francisco: Jossey-Bass.

Sever, M. (2012). A critical look at the theories of sociology of education. *International Journal of Human Sciences, 9*(1), 651-671.

Skiba, R. J., Simmons, A. B., Ritter, S., Gibb, A. C., Rausch, M. K., Cuadrado, J., & Choong-Geun, C. (2008). Achieving equity in special education: History, status, and current challenges. *Exceptional Children, 74*(3), 264-288.

Skrla, L., McKenzie, K. B., & Scheurich, J. J. (2009). *Using equity audits to create equitable and excellent schools*. Thousand Oaks, Calif: Corwin.

Solorzano, D., & Yosso, T. (2000). Towards a critical race theory of Chicano and Chicana education. In C. Tejada, C. Martinez, & Z. Leonardo (Eds.), *Charting new terrains in Chicana(o)/Latina(o) education* (pp. 35–66). Cresskill, NJ: Hampton Press.

Sommerfeld, A. (2011). Recasting non-cognitive factors in college readiness as what they truly are: Non-academic factors. *Journal Of College Admission, 213*, 18-22.

Stage, F. K. (2007a). Answering critical questions using quantitative data. *New Directions for Institutional Research, 133*, 5-16.

Stage, F. K. (2007b). Moving from probabilities to possibilities: Tasks for quantitative criticalists. *New Directions for Institutional Research*, *133*, 95-100.

Stage, F. K. & Wells, R. S. (2014). Critical quantitative inquiry in context. *New Directions for Institutional Research, 158*, 1-7.

Taylor, E. (2009). The foundations of Critical Race Theory in education: An introduction. In E. Taylor, D. Gillborn, & G. Ladson-Billings. (Eds.), Foundations of Critical Race Theory in education, 1-13. New York: Routledge.

Teranishi, R.T. (2007). Race, ethnicity, and higher education policy: The use of critical quantitative research. *New Directions for Institutional Research, 133,* 37-49.

Thornton, B. & Arbogast, G. (2014). Factors affecting school quality in Florida. *Contemporary Issues in Education Research, 7*(20), 69-74.

Williams, H. A. (2005). *Self-taught: African American education in slavery and freedom*. Chapel Hill: University of North Carolina Press.

Williams, K. L. (2014). Strains, strengths, and intervention outcomes: A critical examination of intervention efficacy for underrepresented groups. *New Directions for Institutional Research, 158*, 9-22. doi:10.1002/ir.20042

APPENDIX A: CODEBOOK

Dimension Construction

Staff Quality

HIDEG: M1 A04 Math teacher's highest degree earned

Code	Response
1.00	Bachelors
1.25	Masters
1.50	Educational Specialist Diploma
1.75	PhD/MD/law degree/other professional degree

BASCHED: Math teacher's BA/BS degree awarded by education department

Code	Response
.50	No
1.00	Yes

CERTTYPE: Type of certification the teacher has

Code	Response
.33	No Certification
.67	Partial/Incomplete Certification
1.00	Full Certification

ALTCERT: Whether or not the teacher was granted certification alternatively. M1ALTCERT and N1ALTCERT were reverse coded.

Code	Response
1.00	Yes
.50	No

TOTALEXP: Total experience teaching high school, any subject (computed with M1TCHYR912 and N1TCHYR912)

Code	Response
.50	Novice (≤ 3 years experience)
1.00	Experienced (>3 years experience)

RESIDENCY: Length of residency at current school (computed with M1SCHYRS and N1SCHYRS)

Code	Response
.50	New (≤ 3 years experience)
1.00	Established (>3 years experience)

A1ADMIN: Years served as principal of any school

Code	Response
.50	Novice (≤ 5 years experience)
1.00	Experienced (>5 years experience)

Overall Staff Quality Score:
OSQS = HIDEG + BASCHED + CERTTYPE + ALTCERT + MATHEXP + TOTALEXP + RESIDENCY + PRINEXP

Staff Quality Equity Score:
SQES = 1.00 + 1.00 + 1.00 + 1.00 + 1.00 + 1.00 + 1.00 = 7.00
Equity Present = OSQS≥7
Equity not Present = OSQS < 7

Code	Response
0	Equity not Present
1	Equity Present

Relationship Dimension

Principal Components Analysis (S1MTCHVALUES, S1MTCHRESPCT, S1MTCHFAIR, S1MTCHCONF, S1MTCHMISTKE, S1MTCHTREAT, S1MTCHINTRST, S1MTCHMFDIFF, S1MTCHEASY, S1TALKPROB, S1PROUD)

Direct Oblimin

Initial Run

Initial Run: Should drop S1TALKPROB, S1PROUD

Determinant = .005

KMO = .894

Reran PCA for 2 components

Final Run

- No correlations are too high
- KMO = .9, which exceeds the .6 threshold
- Barlett's test = 61,179.336, p<.001
- 2 components according to tables and scree plot
- Eigen values > 1
- 2 components:
    - Positive Relationship: S1MTCHVALUES, S1MTCHRESPCT, S1MTCHFAIR, S1MTCHCONF, S1MTCHMISTKE, S1MTCHINTRST, S1MTCHEASY
    - Bias: S1MTCHTREAT and S1MTCHMFDIFF

Positive Relationship Total (PRT)

PRT = S1MTCHVALUES + S1MTCHRESPCT + S1MTCHFAIR + S1MTCHCONF + S1MTCHMISTKE + S1MTCHINTRST + S1MTCHEASY

Ideal Positive Relationship (IPR)

IPR = 3 + 3 + 3 + 3 + 3 + 3 + 3 =21

Positive Relationship Equity Score (PRES)

PRES = PRT – IPR

PRES = PRT – 21

Overall Positive Relationship Score (OPRS)

OPRS = PRT * PRES

zOPRS = $\frac{x-\mu}{\sigma}$

Positive Relation Equity Score 2 (PRESCAT): Categorical variable, presence of absence of equity using SQES.

Code	Response
0	Equity not Present (PRES < 0)
1	Equity Present (PRES ≥ 0)

Bias Total (BT)

BT = S1MTCHTREAT + S1MTCHMFDIFF

Ideal Bias (IB)

IB = 3 + 3 = 6

Bias Equity Score (BES)

BES = BT – IB

BES = BT – 6

Overall Bias Score (OBS)

OBS = BT * BES

$$zOBS = \frac{x-\mu}{\sigma}$$

Bias Equity Score 2 (BESCAT): Categorical variable, presence of absence of equity using SQES.

Code	**Response**
0	Equity not Present (BES < 0)
1	Equity Present (BES ≥ 0)

Staff Perceptions

Principal Components Analysis (X1TMEFF, X1TMEXP, X1TMRESP, X1COUPERTEA, X1COUPERCOU, X1COUPERPRI, M1FAMILY, M1DISCIPLINE, M1STUACHIEVE, M1PARENT, M1HOMEFX)

Initial Run

drop: X1TMEFF, X1TMEXP, X1TMRESP, X1COUPERTEA, X1COUPERCOU, X1COUPERPRI

Reran with only M1FAMILY, M1DISCIPLINE, M1STUACHIEVE, M1PARENT, M1HOMEFX

Final Run

- No correlations too high, M1PARENT just below the threshold of .3
- Determinant = .351
- KMO = .806
- Bartlett's = 9872.632, $p<.001$
- 1 component extracted explains 51% of variance → Deficit Orientation

Deficit Orientation (DOT)

DOT = M1FAMILY + M1DISCIPLINE + M1STUACHIEVE + M1PARENT + M1HOMEFX

Ideal Deficit Orientation (IDO)

IDO = 3 + 3 + 3 + 3 + 3 = 15

Deficit Orientation Equity Score (DOES)

DOES = DOT – IDO

DOES = DOT – 15

Overall Deficit Orientation Score

ODOS = DOT * DOES

zODOS = $\frac{x-\mu}{\sigma}$

Deficit Orientation Equity Score 2 (DOESCAT): Categorical variable, presence of absence of equity using SQES.

Code	Response
0	Equity not Present (DOES < 0)
1	Equity Present (DOES ≥ 0)

School Offerings

PLAN

Code	Response
.50	Does not require an education or career plan
1.00	Requires an education or career plan

NUMAP

Code	Response
.50	1-5 AP Classes Offered
.75	6-10 AP Classes Offered
1.00	11-15 AP Classes Offered
1.25	16+ AP Classes Offered

C1CREDREC (School offers school credit recovery program)

Code	Response
.50	No
1.00	Yes

C1OUTSIDE (School Offers outside help)

Code	Response
.50	No
1.00	Yes

C1DROPOUT (School offers dropout prevention program)

Code	Response
.50	No
1.00	Yes

Overall School Offerings Score:
OSOS = PLAN + NUMAP + C1CREDREC + C1OUTSIDE + C1DROPOUT
School Offerings Equity = 1.00 + 1.00 + 1.00 + 1.00 +1.00 = 5.00

Code	Response
0	Equity not Present
1	Equity Present

Dimension Variables

List of Demographic Variables

Variable Name	Variable Label
X1SEX	X1 Student's sex
X1RACE	X1 Student's race/ethnicity-composite
X1BLACK	X1 Student is Black or African American-composite
X1FAMINCOME	X1 Total family income from all sources 2008
X1POVERTY	X1 Poverty indicator (relative to 100% of Census poverty threshold)
X1SES	X1 Socio-economic status composite
X1SESQ5	X1 Quintile coding of X1SES composite
SES	Socioeconomic Status organized by low middle and high
X1IEPFLAG	X1 Individualized Education Plan
X1CONTROL	X1 School control
X1LOCALE	X1 School locale (urbanicity)

Staff Quality Dimension

Variable Name	Variable Label
M1HIDEG	M1 A04 Math teacher's highest degree earned
M1BASCHED	M1 A11 Math teacher's BA/BS degree awarded by education department
CERTTYPE	Math teacher's certification
ALTCERT	Math Teacher has an alternative certificate
MATHEXP	Teacher's experience teaching math
TOTALEXP	Math teacher's total experience teaching
RESIDENCY	Math teacher's residency at current school
PRINEXP	Principal's Experience as Principal

Relationships Dimension

Variable Name	Variable Label
S1MTCHVALUES	S1 C11A 9th grader's fall 2009 math teacher values/listens to students' ideas
S1MTCHRESPCT	S1 C11B 9th grader's fall 2009 math teacher treats students with respect
S1MTCHFAIR	S1 C11C 9th grader's fall 2009 math teacher treats every student fairly
S1MTCHCONF	S1 C11D 9th grader's fall 2009 math teacher thinks all student can be successful
S1MTCHMISTKE	S1 C11E 9th grader's fall 2009 math teacher thinks mistakes OK if students learn
S1MTCHTREAT	S1 C11F 9th grader's fall 2009 math teacher treats some kids better than others
S1MTCHINTRST	S1 C11G 9th grader's fall 2009 math teacher makes math interesting
S1MTCHMFDIFF	S1 C11H 9th grader's fall 2009 math teacher treats males/females differently
S1MTCHEASY	S1 C11I 9th grader's fall 2009 math teacher makes math easy to understand
S1TALKPROB	S1 E01C 9th grader has teacher/adult in school he/she can talk to about problems
S1PROUD	S1 E01B 9th grader is proud to be part of his/her school

Staff Perceptions Dimension

Variable Name	Variable Label
Teaching	
X1TMEFF	X1 Scale of math teacher's self-efficacy
X1TMEXP	X1 Scale of math teacher's perceptions of math teachers' expectations
X1TMRESP	X1 Scale of math teacher's perceptions of collective responsibility
X1COUPERTEA	X1 Scale of counselor's perceptions of teacher expectations
X1COUPERCOU	X1 Scale of counselor's perceptions of counselor expectations
X1COUPERPRI	X1 Scale of counselor's perceptions of principal's expectations
Deficit Beliefs	
M1FAMILY	M1 D04A Amount a student can learn is primarily related to family background
M1DISCIPLINE	M1 D04B Students not disciplined at home not likely to accept school discipline
M1STUACHIEVE	M1 D04C Teachers are limited b/c home environment influences student achievement
M1PARENT	M1 D04D If parents would do more for children teacher could do more for students
M1HOMEFX	M1 D04H Cannot do much b/c student motivation/performance depends on home

School Offerings Dimension

Variable Name	Variable Label
PLAN	Career and/or Education Plan is Required
C1CREDREC	C1 B19D Off-track/day/evening/summer school credit recovery program is available
C1OUTSIDE	C1 B19F Support outside the school day for students needing extra help
C1DROPOUT	C1 B24 School has a formal dropout prevention program for high school students
NUMAP	Number of AP classes offered at school

Composite Variables

X1TMEFF

Variable Name	Variable Label
M1FAMILY	M1 D04A Amount a student can learn is primarily related to family background
M1DISCIPLINE	M1 D04B Students not disciplined at home not likely to accept school discipline
M1STUACHIEVE	M1 D04C Teachers are limited b/c home environment influences student achievement
M1PARENT	M1 D04D If parents would do more for children teacher could do more for students
M1RETAIN	M1 D04E Knows how to increase student retention of info from lesson to lesson
M1REDIRECT	M1 D04F Knows techniques to redirect disruptive students quickly
M1GETTHRU	M1 D04G Can get through to even the most difficult or unmotivated students
M1HOMEFX	M1 D04H Cannot do much b/c student motivation/performance depends on home

X1TMEXP

Variable Name	Variable Label
M1TEACHING	M1 B01A Math teachers in this school set high standards for teaching
M1LEARNING	M1 B01B Math teachers in the school set high standards for students' learning
M1BELIEVE	M1 B01C Math teachers in this school believe all students can do well
M1CLEARGOALS	M1 B01D Math teachers in this school make goals clear to students
M1GIVEUP	M1 B01E Math teachers in this school have given up on some students
M1CARE	M1 B01F Math teachers in this school care only about smart students
M1EXPECT	M1 B01G Math teachers in this school expect very little from students
M1WORKHARD	M1 B01H Math teachers in the school work hard to make sure all students learn

X1TMRESP

Variable Name	Variable Label
M1TSCHDISC	M1 D06A Teachers at this school help maintain discipline in the entire school
M1TIMPROVE	M1 D06B Teachers at this school take responsibility for improving the school
M1TSETSTDS	M1 D06C Teachers at this school set high standards for themselves
M1TSELFDEV	M1 D06D Teachers at school feel responsible for developing student self-control
M1THELPBEST	M1 D06E Teachers at school feel responsible for helping each other do their best
M1TALLLEARN	M1 D06F Teachers at this school feel responsible that all students learn
M1TFAIL	M1 D06G Teachers at school feel responsible when students in this school fail

X1COUPERTEA

Variable Name	Variable Label
C1TTEACHING	C1 D01A Teachers in this school set high standards for teaching
C1TLEARNING	C1 D01B Teachers in this school set high standards for students' learning
C1TBELIEVE	C1 D01C Teachers in this school believe all students can do well
C1TWORKHARD	C1 D01G Teachers in this school work hard to make sure all students learn
C1TGIVEUP	C1 D01D Teachers in this school have given up on some students
C1TCARE	C1 D01E Teachers in this school care only about smart students
C1TEXPECT	C1 D01F Teachers in this school expect very little from students

X1COUPERCOU

Variable Name	Variable Label
C1CLEARNING	C1 D02A Counselors in this school set high standards for students' learning
C1CBELIEVE	C1 D02B Counselors in this school believe all students can do well
C1CWORKHARD	C1 D02F Counselors in this school work hard to make sure all students learn
C1CGIVEUP	C1 D02C Counselors in this school have given up on some students
C1CCARE	C1 D02D Counselors in this school care only about smart students
C1CEXPECT	C1 D02E Counselors in this school expect very little from students

X1COUPERPRI

Variable Name	Variable Label
C1PLEARNING	C1 D03A Principal in this school sets high standards for students' learning
C1PBELIEVE	C1 D03B Principal in this school believes all students can do well
C1PWORKHARD	C1 D03F Principal in this school works hard to make sure all students learn
C1PGIVEUP	C1 D03C Principal in this school has given up on some students
C1PCARE	C1 D03D Principal in this school cares only about smart students
C1PEXPECT	C1 D03E Principal in this school expects very little from students